Conservation Service

United States Department of Agriculture

ashington Water Supply Outlook Report April 1, 2004

Water Supply Outlook Reports
and
Federal - State - Private
Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Washington
Water Supply Outlook

April 2004

General Outlook

Once again the story continues to be below average precipitation with above average temperatures. Record snowmelt caused by record high temperatures was reported over the last several weeks. Conditions since April 1 have exasperated the problem with an average daily snowpack loss of 1%, more indicative of the month of May. April-September streamflow forecasts have been reduced by an average of 12% throughout the state. Streams lacking reservoir control are reporting flows considerably higher than normal and may very well reach peak up to a month early. Weather forecasters continue to struggle with long range climatological forecasts. At this point it appears that we are in for continued dry and warm conditions.

Snowpack

The April 1 statewide SNOTEL readings dropped from again from last month to 87% of average. The Entiat River Basin snow surveys reported the lowest readings at 49% of average. Readings in the Tolt River Basin reported the highest at 126% of average. Westside averages from SNOTEL, and April 1 snow surveys, included the North Puget Sound river basins with 85% of average, the Central Puget river basins with 105%, and the Lewis-Cowlitz basins with 102% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 83% and the Wenatchee area with 80%. Snowpack in the Spokane River Basin was at 81% and the Walla Walla River Basin had 84% of average. Maximum snow cover in Washington was at Paradise Park SNOTEL near Mt. Rainer, with water content of 72.4 inches. This site would normally have 71.9 inches of water content on April 1. Last year at this time Paradise Park had 53.1 inches of snow water. The highest average in the state was Alpine Meadows SNOTEL in the Tolt River Basin with 130% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE	DATE OF PEAK OR PROJECTED
Spokane	125	81	3/28
Newman Lake	140	75	3/18
Pend Oreille	86	78	4/8
Okanogan	113	82	4/6
Methow	104	72	4/14
Similkameen	113	83	NA
Wenatchee	96	72	3/28
Chelan	89	70	4/14
Stemilt - Colockum	105	103	4/1
Upper Yakima	104	76	3/28
Lower Yakima	104	89	4/11
Ahtanum Creek	105	89	4/1
Walla Walla	115	84	3/28
Lower Snake	111	89	3/31
Cowlitz	124	96	4/12
Lewis	169	109	3/29
White	101	91	4/11
Green	136	87	4/11
Cedar	175	86	3/29
Snoqualmie	173	102	3/31
Skykomish	177	105	3/31
Skagit	106	77	4/11
Baker	113	77	NA
Nooksack	155	100	3/21
Olympic Peninsula	100	76	4/11

Precipitation

During the month of March, the National Weather Service and Natural Resources Conservation Service climate stations reported below average precipitation totals throughout Washington river basins. The highest percent of average in the state was at the Yakima Airport which reported 165% of average for a total of 2.76 inches. The average for this site is 1.67 inches for March. The wettest spot in the state was reported at Elbow SNOTEL in the South Fork Nooksack with a March accumulation of 14.7 inches and a total of 117.4 inches for the water-year. Basin averages for the water year dropped across the state, due to a very dry March, but mostly remain near average.

RIVER BASIN	MARCH PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	62	89
Colville-Pend Oreille	59	84
Okanogan-Methow	71	95
Wenatchee-Chelan	82	92
Upper Yakima	75	95
Lower Yakima	79	90
Walla Walla	48	95
Lower Snake	60	96
Cowlitz-Lewis	69	85
White-Green-Puyallup	83	91
Central Puget Sound	81	98
North Puget Sound	93	106
Olympic Peninsula	76	109

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation and flood control. Reservoir storage in the Upper Yakima Basin was 432,100-acre feet, 78% of average and 129,600-acre feet, 85% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 61% of average for April 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 160,500 acre feet, 95% of average and 67% of capacity; Chelan Lake, 283,800-acre feet, 131% of average and 42% of capacity; and the Skagit River reservoirs at 102% of average and 54% of capacity.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	67	95
Colville-Pend Oreille	N/A	N/A
Okanogan-Methow	46	61
Wenatchee-Chelan	42	131
Upper Yakima	52	78
Lower Yakima	56	85
North Puget Sound	54	102

For more information contact your local Natural Resources Conservation Service office.

Streamflow

April forecasts for April-September flows vary from 98% of average for Stemilt Creek near Wenatchee to 62% of average for Salmon Creek near Conconully. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 85%; Green River, 90%; and Skagit River, 86%. Some Eastern Washington streams include the Yakima River near Parker, 80%: Wenatchee River at Plain, 75%; and Spokane River near Post Falls, 76%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide March streamflows varied from much below to much above average. Many of the reported streamflow measurements are from regulated reservoir systems, therefore streamflow readings may not be indicative of actual snowmelt runoff. Non-regulated streams such as the Methow River at Peteros, show true flows from snowmelt caused by the above average temperatures during March. The South Fork Walla Walla River near Milton Freewater, OR had the highest reported flows with 169% of average. The Kettle River near Laurier with 62% of average was the lowest in the state.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	63-79
Colville-Pend Oreille	68-91
Okanogan-Methow	62-74
Wenatchee-Chelan	70-98
Upper Yakima	72-79
Lower Yakima	77-85
Walla Walla	84-87
Lower Snake	72-87
Cowlitz-Lewis	77-89
White-Green-Puyallup	90-94
Central Puget Sound	85-89
North Puget Sound	86-87
Olympic Peninsula	83-89

STREAM	PERCENT OF AVERAGE MARCH STREAMFLOWS
Pend Oreille Below Box Canyon	84
Kettle at Laurier	62
Columbia at Birchbank	91
Spokane at Long Lake	79
Similkameen at Nighthawk	111
Okanogan at Tonasket	63
Methow at Pateros	149
Chelan at Chelan	140
Wenatchee at Pashastin	121
Yakima at Cle Elum	120
Yakima at Parker	104
Naches at Naches	102
Grande Ronde at Troy	112
Snake below Lower Granite Dam	77
SF Walla Walla near Milton Freewater	169
Columbia River at The Dalles	83
Lewis at Ariel	80
Cowlitz below Mayfield Dam	79
Skagit at Concrete	77

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BASIN SUMMARY OF SNOW COURSE DATA

APRIL 2004

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	3/29/04	18	5.4	3.9	5.6
AHTANUM R.S.	3100	3/30/04	0	.0	.0	5.3
ALPINE MEADOWS	3500	4/01/04	---	55.0E	16.6	42.3
ALPINE MEADOWS SNTL	3500	4/01/04	103	56.7	23.0	43.6
AMBROSE	6480	3/29/04	30	10.1	16.1	12.4
ASHLEY DIVIDE	4820	3/30/04	10	3.4	2.4	6.0
BADGER PASS	6900	3/23/04	78	30.6	31.2	--
BADGER PASS SNOTEL	6900	4/01/04	65	28.8	30.7	35.3
BAIRD #2	3220	3/29/04	19	7.1	5.4	--
BAREE CREEK	5500	3/29/04	82	34.2	36.6	43.1
BAREE MIDWAY	4600	3/29/04	75	30.8	25.3	33.0
BAREE TRAIL	3800	3/29/04	23	7.9	6.2	7.7
BARKER LAKES SNOTEL	8250	4/01/04	40	11.8	13.8	14.6
BARNES CREEK CAN.	5320	3/28/04	53	19.1	20.5	20.4
BASIN CREEK SNOTEL	7180	4/01/04	22	6.5	7.8	8.7
BASSOO PEAK	5150	4/01/04	18	5.9	7.2	9.7
BEAVER CREEK TRAIL	2200	3/31/04	23	10.3	7.8	11.7
BEAVER PASS	3680	3/30/04	54	21.7	22.0	28.8
BEAVER PASS SNOTEL	3680	4/01/04	93	32.2	27.1	--
BERNE-MILL CREEK (d)	3170	4/01/04	59	25.8	21.0	28.1
BIG CREEK	6750	3/29/04	81	33.7	36.4	43.7
BLACK MOUNTAIN	7750	3/25/04	39	12.6	15.2	14.6
BLACK PINE SNOTEL	7100	4/01/04	21	7.4	12.9	12.5
BLACKWALL PEAK CAN.	6370	4/01/04	---	27.2	24.5	35.1
BLEWETT PASS #2	4270	3/30/04	19	8.1	12.0	14.7
BLEWETT PASS#2SNOTEL	4270	4/01/04	15	5.4	6.4	16.4
BLUE LAKE	5900	3/23/04	50	19.4	20.2	23.7
BRENDA MINE CAN.	4450	4/01/04	---	12.5	9.6	12.5
BRIEF	1600	3/30/04	0	.0	.0	2.5
BROOKMERE CAN.	3000	3/29/04	18	5.2	5.7	7.9
BROWN TOP AM	6000	3/29/04	127	52.2	53.2	60.8
BRUSH CREEK TIMBER	5000	3/30/04	13	4.5	4.7	8.1
BULL MOUNTAIN	6600	3/26/04	0	.0	6.1	5.9
BUMPING LAKE (NEW)	3400	4/01/04	27	10.8	13.8	17.6
BUMPING RIDGE SNOTEL	4600	4/01/04	71	26.3	21.6	28.6
BUNCHGRASS MDWSNOTEL	5000	4/01/04	---	25.4	29.3	30.2
BURNT MOUNTAIN PIL	4200	4/01/04	38	16.7	10.8	--
BUTTE CREEK	4070	3/30/04	17	6.4	7.4	8.3
CAMP MISERY	6400	4/01/04	103	41.4	42.3	49.3
CAYUSE PASS	5300	4/01/04	---	71.0E	70.0	79.8
CEDAR GROVE	3760	3/25/04	28	10.0	8.7	11.4
CHESSMAN RESERVOIR	6200	3/25/04	3	.9	2.1	3.5
CHICKEN CREEK	4060	3/25/04	45	16.0	13.6	15.2
CHIWAUKUM G.S.	2500	4/01/04	8	3.1	4.9	9.2
CITY CABIN	2390	4/01/04	---	9.5E	.0	11.1
COLD CREEK STRIP	6020	3/29/04	27	6.9	9.0	--
COLOCKUM PASS	5370	3/30/04	39	13.3	16.0	16.3
COMBINATION SNOTEL	5600	4/01/04	2	1.0	5.3	4.9
COPPER BOTTOM SNOTEL	5200	4/01/04	1	.2	12.2	11.0
COPPER CREEK	5700	3/24/04	20	7.6	13.8	13.3
COPPER MOUNTAIN	7700	3/27/04	28	8.9	10.5	11.2
CORRAL PASS SNOTEL	6000	4/01/04	---	35.6	31.3	34.9
COTTONWOOD CREEK	6400	3/25/04	30	9.0	8.2	8.3
COUGAR MTN. SNOTEL	3200	4/01/04	28	12.0	5.6	17.7
COX VALLEY	4500	4/01/04	82	34.3	29.6	38.7
COYOTE HILL	4200	3/30/04	14	5.8	7.7	8.7
DALY CREEK SNOTEL	5780	4/01/04	21	7.8	13.4	11.1
DEER PARK	5200	3/27/04	27	8.8	11.7	18.8
DESERT MOUNTAIN	5600	3/23/04	35	11.9	13.6	14.7
DEVILS PARK	5900	3/29/04	94	40.0	38.8	44.2
DISCOVERY BASIN	7050	3/30/04	25	9.2	12.0	10.4
DIX HILL	6400	3/28/04	17	5.3	12.8	10.3
DOMMERIE FLATS	2200	3/31/04	0	.0	.0	3.8
DUNGENESS SNOTEL	4100	4/01/04	14	2.7	.2	--
EAST FORK R.S.	5400	3/29/04	8	2.2	7.4	4.7
EASY PASS AM	5200	4/01/04	---	60.0E	56.0	81.0
EL DORADO MINE	7800	3/25/04	52	17.4	22.2	20.2
ELBOW LAKE SNOTEL	3200	4/01/04	78	36.8	21.6	39.2
EMERY CREEK	4350	3/23/04	41	16.1	13.7	--
EMERY CREEK SNOTEL	4350	4/01/04	33	12.1	14.0	15.3
ENDERBY CAN.	5800	3/30/04	86	31.4	36.2	40.1
ESPERON CK. MID CAN.	4250	3/28/04	41	13.7	8.3	14.6
ESPERON CK. UP CAN.	5050	3/28/04	48	15.4	10.0	17.1
FARRON CAN.	4000	3/26/04	33	11.2	9.6	12.5
FATTY CREEK	5500	3/29/04	49	19.8	21.0	24.3
FISH CREEK	8000	3/25/04	26	7.9	8.4	9.9
FISH LAKE	3370	3/30/04	59	27.7	24.7	31.5
FISH LAKE SNOTEL	3370	4/01/04	62	25.3	22.6	34.5
FLATTOP MTN SNOTEL	6300	4/01/04	96	36.1	41.8	45.1
FLEECER RIDGE	7500	3/26/04	21	6.2	10.8	10.9
FOURTH OF JULY SUM	3200	4/01/04	0	.0	.0	5.7
FRED BURR PASS	8000	3/29/04	55	20.2	23.3	23.9
FREEZEOUT CK. TRAIL	3500	3/30/04	22	7.8	8.2	11.3
FROHNER MDWS SNOTEL	6480	4/01/04	16	5.8	8.9	8.0
FROST MEADOWS	4630	3/30/04	44	15.5	17.0	--
GOAT CREEK	3600	3/30/04	3	1.2	2.7	3.6
GOLD CREEK LAKE	7200	3/25/04	40	13.3	16.2	14.7
GRASS MOUNTAIN #2	2900	4/01/04	4	1.6	.0	10.0
GRAVE CREEK	4300	4/01/04	39	15.2	14.5	--
GRAVE CRK SNOTEL	4300	4/01/04	39	14.4	15.2	15.6
GRAYSTOKE LAKE CAN.	5500	3/31/04	43	11.2	11.2	16.0
GREEN LAKE SNOTEL	6000	4/01/04	62	23.7	21.3	23.0
GRIFFIN CR DIVIDE	5150	4/01/04	13	4.0	6.3	10.3
GROUSE CAMP SNOTEL	5380	4/01/04	43	16.9	21.0	19.8
GUNSIGHT LAKE	6300	3/23/04	84	34.9	32.8	39.3
HAND CREEK	5030	3/30/04	22	9.1	11.0	--
HAND CREEK SNOTEL	5030	4/01/04	20	7.4	9.4	11.7
HARTS PASS SNOTEL	6500	4/01/04	81	34.8	26.0	46.3
HEART LAKE TRAIL	4800	3/29/04	43	16.3	14.6	20.6
HELL ROARING DIVIDE	5770	3/29/04	64	25.9	25.7	29.5
HERRIG JUNCTION	4850	3/25/04	60	24.8	23.8	26.0
HIGH RIDGE SNOTEL	4980	4/01/04	---	21.7	17.8	23.1
HOLBROOK	4530	3/31/04	1	.4	7.5	8.2
HOODOO BASIN SNOTEL	6050	4/01/04	88	34.5	39.6	45.3
HUCKLEBERRY SNOTEL	2000	4/01/04	0	.0	.0	--
HUMBOLDT GLCH SNOTEL	4250	4/01/04	---	8.8	4.2	11.2
HURRICANE	4500	4/01/04	---	7.5E	8.6	19.1
INTERGAARD	6450	3/25/04	18	5.9	6.8	7.7
IRENE'S CAMP	5530	3/29/04	30	8.1	8.3	--
ISINTOK LAKE CAN.	5100	3/30/04	2	5.7	4.3	7.2
JUNE LAKE SNOTEL	3200	4/01/04	89	37.1	17.3	35.7
KELLOGG PEAK	5560	3/28/04	59	25.0	19.1	29.2
KISHENEHN	3890	3/28/04	21	7.2	5.8	6.8
KIT CARSON PASTURE	4950	3/23/04	10	3.7	10.6	8.1
KLESILKWA CAN.	3450	3/31/04	17	5.6	4.9	11.5
KRAFT CREEK SNOTEL	4750	4/01/04	5	1.3	12.3	14.1
LESTER CREEK	3100	4/01/04	50	19.4	15.8	21.4
LOGAN CREEK	4300	3/30/04	15	5.3	4.6	6.7
LOLO PASS SNOTEL	5240	4/01/04	59	25.5	34.3	30.3
LONE PINE SNOTEL	3800	4/01/04	---	43.1	24.5	36.4
LOOKOUT SNOTEL	5140	4/01/04	61	25.8	20.6	31.8
LOST HORSE	5940	4/01/04	0	27.3E	30.6	30.7
LOST HORSE MTN CAN.	6300	3/30/04	30	9.1	6.9	9.4
LOST HORSE SNOTEL	5000	4/01/04	41	17.8	18.3	18.3
LOST LAKE SNOTEL	6110	4/01/04	---	47.7	43.8	60.0
LOUP LOUP CAMPGROUND		3/26/04	21	6.7	7.5	--
LUBRECHT FOREST NO 3	5450	3/30/04	4	1.1	5.8	5.7
LUBRECHT FOREST NO 4	4650	3/30/04	0	.0	1.6	1.3
LUBRECHT FOREST NO 6	4040	3/30/04	0	.0	1.6	1.6
LUBRECHT HYDROPLOT	4200	3/29/04	0	.0	4.4	2.9
LUBRECHT SNOTEL	4680	4/01/04	0	.0	5.2	3.6
LYMAN LAKE SNOTEL	5900	4/01/04	---	41.4	55.6	65.4
LYNN LAKE	4000	4/01/04	65	25.7	18.7	20.4
MARIAS PASS	5250	4/01/04	31	10.7	13.2	16.8
MARTEN LAKE AM	3600	4/01/04	---	57.0E	49.0	71.7
MEADOWS CABIN	1900	3/30/04	0	.0	1.4	4.0
MEADOWS PASS SNOTEL	3240	4/01/04	45	20.8	17.1	23.9
MERRITT	2140	4/01/04	35	1.3	2.3	12.1
M F NOOKSACK SNOTEL	4980	4/01/04	145	66.0	55.8	--
MICA CREEK SNOTEL	4750	4/01/04	56	23.8	17.0	25.1
MINERAL CREEK	4000	3/29/04	32	13.1	15.2	17.4
MINERS RIDGE SNOTEL	6200	4/01/04	---	40.0	42.0	53.0
MISSION CREEK CAN.	5840	4/01/04	---	20.8	18.0	20.0
MISSION RIDGE	5000	3/29/04	45	15.0	16.2	17.4
MONASHEE PASS CAN.	4500	3/28/04	37	12.9	11.6	13.5
MORSE LAKE SNOTEL	5400	4/01/04	---	48.6	52.1	55.5
MOSES MTN SNOTEL	4800	4/01/04	33	10.5	15.1	15.9
MOSQUITO RDG SNOTEL	5200	4/01/04	---	37.2	31.0	35.8
MOULTON RESERVOIR	6850	3/25/04	17	5.4	8.1	6.9
MOUNT CRAG SNOTEL	4050	4/01/04	76	30.7	22.9	30.8
MT. KOBAU CAN.	5500	3/26/04	30	9.4	11.7	12.5
MOWICH SNOTEL	3150	4/01/04	0	.0	.0	--
MOUNT GARDNER SNOTEL	2860	4/01/04	---	11.1	4.2	13.0
MUTTON CREEK #1	5700	3/26/04	38	10.8	15.0	13.9
N.F. ELK CR SNOTEL	6250	4/01/04	28	9.8	14.1	12.4
NEVADA RIDGE SNOTEL	7020	4/01/04	31	12.0	18.3	15.5
NEW HOZOMEEN LAKE	2800	3/30/04	15	5.5	--	10.0
NEZ PERCE CMP SNOTEL	5650	4/01/04	29	11.9	17.8	14.7
NEZ PERCE PASS	6570	3/23/04	35	13.0	19.2	17.8
NOISY BASIN	6040	4/01/04	98	38.6	36.9	--
NOISY BASIN SNOTEL	6040	4/01/04	90	34.6	36.2	40.9
NORTH FORK JOCKO	6330	3/29/04	88	38.7	38.4	--
OLALLIE MDWS SNOTEL	3960	4/01/04	93	47.7E	41.6	55.9
OLALLIE MEADOWS	3630	3/31/04	63	28.7	27.0	38.7
OPHIR PARK	7150	3/28/04	34	11.9	16.8	16.7
OYAMA LAKE CAN.	4100	3/29/04	20	6.3	3.5	6.7
PALISADE CREEK	8250	3/31/04	59	25.9	31.7	29.8
PARADISE PARK SNOTEL	5500	4/01/04	---	72.4	53.1	71.9
PARK CK RIDGE SNOTEL	4600	4/01/04	78	36.2	40.0	47.6
PETERSON MDW SNOTEL	7200	4/01/04	27	8.8	11.8	10.5
PIGTAIL PEAK SNOTEL	5900	4/01/04	129	58.2	48.4	53.2
PIKE CREEK	5930	4/01/04	49	19.0	19.6	--
PIKE CREEK SNOTEL	5930	4/01/04	49	20.3	21.7	27.5
PIPESTONE PASS	7200	3/27/04	11	3.2	4.2	5.7
POPE RIDGE SNOTEL	3540	4/01/04	27	10.3	15.3	18.4
POSTILL LAKE CAN.	4200	3/31/04	26	9.0	6.5	8.8

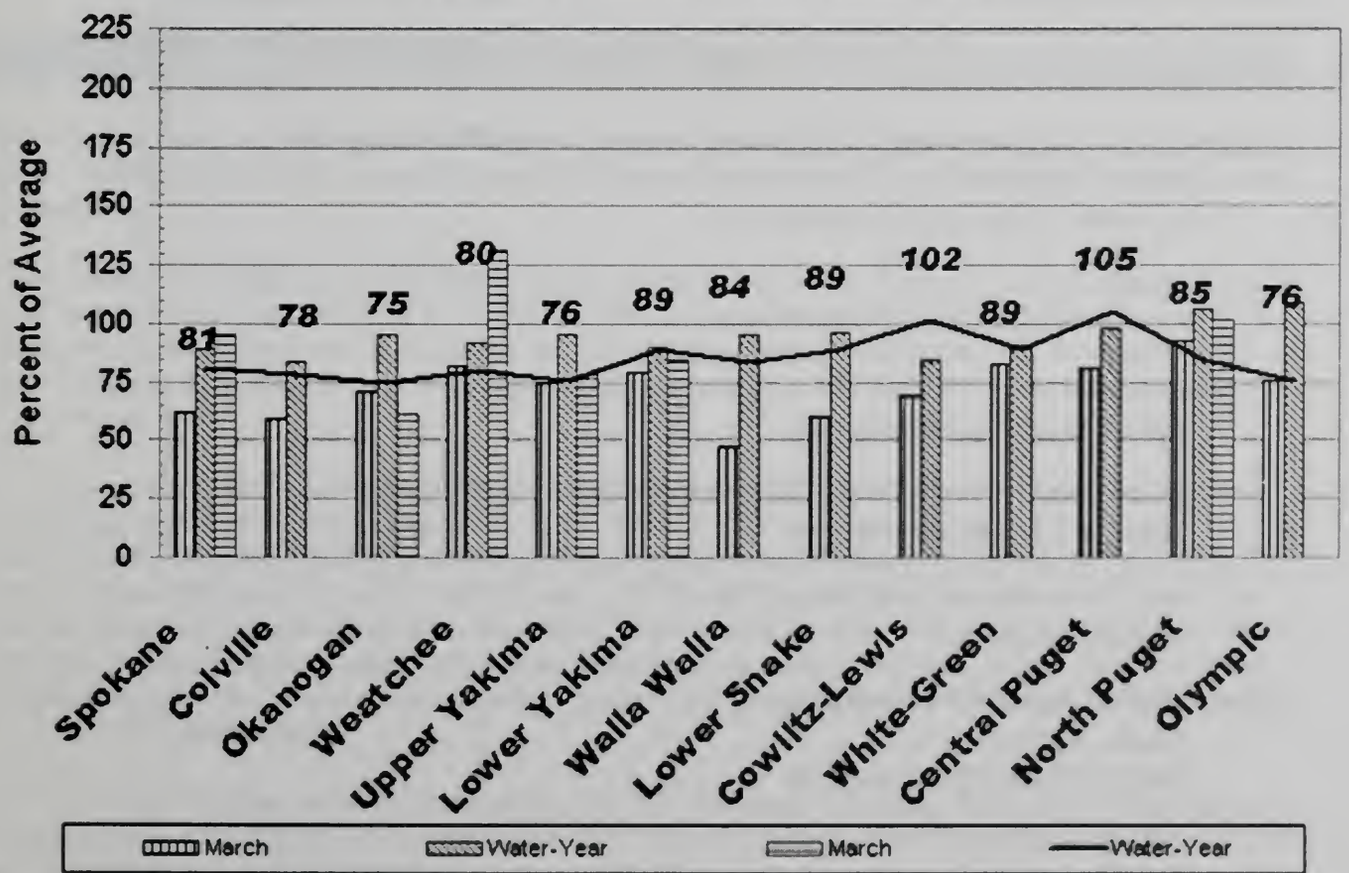
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
POTATO HILL SNOTEL	4500	4/01/04	---	24.1	24.1	25.3
QUARTZ PEAK SNOTEL	4700	4/01/04	49	17.9	13.5	21.2
RAGGED RIDGE	3330	3/31/04	2	1.0	.0	4.1
RAINY PASS SNOTEL	4780	4/01/04	78	30.4	28.4	44.0
REX RIVER SNOTEL	1900	4/01/04	---	31.4	15.9	31.2
ROCKER PEAK SNOTEL	8000	4/01/04	36	11.7	14.4	14.3
ROLAND SUMMIT	5120	4/01/04	69	31.4	26.5	36.4
ROUND TOP MTN	4020	3/29/04	22	9.7	.5	--
RUSTY CREEK	4000	3/26/04	10	2.9	5.1	5.5
SADDLE MTN SNOTEL	7900	4/01/04	60	20.1	28.7	25.8
SALMON MDWS SNOTEL	4500	4/01/04	24	8.0	9.4	11.1
SASSE RIDGE SNOTEL	4200	4/01/04	68	29.0	28.5	37.3
SATUS PASS	4030	3/29/04	21	8.2	4.6	--
SAVAGE PASS SNOTEL	6170	4/01/04	73	22.9	30.6	26.5
SAWMILL RIDGE	4700	4/01/04	80	33.3	22.5	33.5
SENTINEL BT SNOTEL	4920	4/01/04	22	7.7	--	--
SHEEP CANYON SNOTEL	4050	4/01/04	---	33.4	14.7	37.8
SHELL ROCK	4500	3/30/04	0	.0	4.0	--
SHERWIN SNOTEL	3200	4/01/04	---	6.2	1.5	10.1
SKALKAHO SNOTEL	7260	4/01/04	52	18.8	25.5	24.3
SKOOKUM CREEK SNOTEL	3920	4/01/04	53	30.2	8.4	26.3
SLIDE ROCK MOUNTAIN	7100	3/26/04	33	11.3	16.8	15.5
SOURDOUGH GULCH SNTL	4000	4/01/04	0	.0	.0	--
SPENCER MDW SNOTEL	3400	4/01/04	---	32.1	15.3	30.8
SPIRIT LAKE SNOTEL	3100	4/01/04	---	1.1	.0	--
SPOTTED BEAR MTN.	7000	3/23/04	31	11.4	12.6	14.1
SPRUCE SPRINGS SNTL	5700	4/01/04	20	8.0	15.2	--
STARVATION CANYON	6750	3/26/04	48	14.2	17.5	19.5
STAHL PEAK SNOTEL	6030	4/01/04	82	30.2	33.1	35.3
STAMPEDE PASS SNOTEL	3860	4/01/04	84	38.0	31.6	45.3
STEMPLE PASS	6600	3/29/04	23	7.2	9.2	10.2
STEVENS PASS SNOTEL	4070	4/01/04	84	32.6	30.8	42.6
STEVENS PASS SAND SD	3700	4/01/04	61	24.8	25.3	33.3

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
STORM LAKE	7780	3/30/04	36	11.8	12.9	13.3
STRANGER MOUNTAIN	4230	3/29/04	22	9.1	8.4	12.2
STRYKER BASIN	6180	3/25/04	68	26.8	27.9	31.9
STUART MOUNTAIN	7400	3/29/04	66	27.8	34.9	--
SUMMERLAND RES CAN.	4200	3/31/04	23	7.2	5.0	8.9
SUNSET SNOTEL	5540	4/01/04	---	17.6	16.2	31.5
SURPRISE LKS SNOTEL	4250	4/01/04	---	50.1	38.9	46.1
SWAMP CREEK SNOTEL	4000	4/01/04	28	12.2	14.0	--
TEN MILE LOWER	6600	3/25/04	17	4.8	7.8	7.0
TEN MILE MIDDLE	6800	3/25/04	28	8.3	11.2	11.4
THUNDER BASIN	4200	3/31/04	50	17.8	16.8	21.9
THOMPSON CREEK	2500	3/31/04	0	.0	.0	--
TINKHAM CREEK SNOTEL	3000	4/01/04	---	21.5	16.8	30.0
TOATS COULEE	2850	3/29/04	0	.0	.0	1.4
TOUCHET SNOTEL	5530	4/01/04	69	27.0	24.5	34.7
TRINKUS LAKE	6100	3/23/04	79	33.0	38.2	42.0
TROUGH #2 SNOTEL	5310	4/01/04	23	9.6	11.5	10.0
TRUMAN CREEK	4060	3/30/04	5	1.5	2.4	3.7
TUNNEL AVENUE	2450	3/31/04	30	13.1	11.4	19.2
TV MOUNTAIN	6800	3/29/04	40	15.4	16.1	18.5
TWELVEMILE SNOTEL	5600	4/01/04	30	12.0	17.0	17.5
TWIN CAMP	4100	4/01/04	51	19.6	15.5	24.1
TWIN CREEKS	3580	3/23/04	26	9.5	6.7	9.6
TWIN LAKES SNOTEL	6400	4/01/04	82	38.3	45.0	39.7
UPPER HOLLAND LAKE	6200	3/23/04	70	29.4	35.3	34.6
UPPER WHEELER SNOTEL	4400	4/01/04	39	15.7	12.5	13.1
WARM SPRINGS SNOTEL	7800	4/01/04	54	19.3	23.6	21.2
WATSON LAKES AM	4500	4/01/04	---	49.0E	42.5	61.7
WATERHOLE SNOTEL	5000	4/01/04	85	23.9	34.9	--
WEASEL DIVIDE	5450	4/01/04	70	29.2	26.7	32.9
WELLS CREEK SNOTEL	4200	4/01/04	82	34.4	24.2	32.2
WHITE PASS ES SNOTEL	4500	4/01/04	58	21.8	17.6	23.9
WHITE ROCKS MTN CAN.	7200	3/31/04	56	19.5	13.5	23.1

NRCS Natural Resources Conservation Service

April 1, 2004 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2003 - Current Date)



USDA NRCS
Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow/snow

Oregon:
http://www.or.nrcs.usda.gov/snow/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

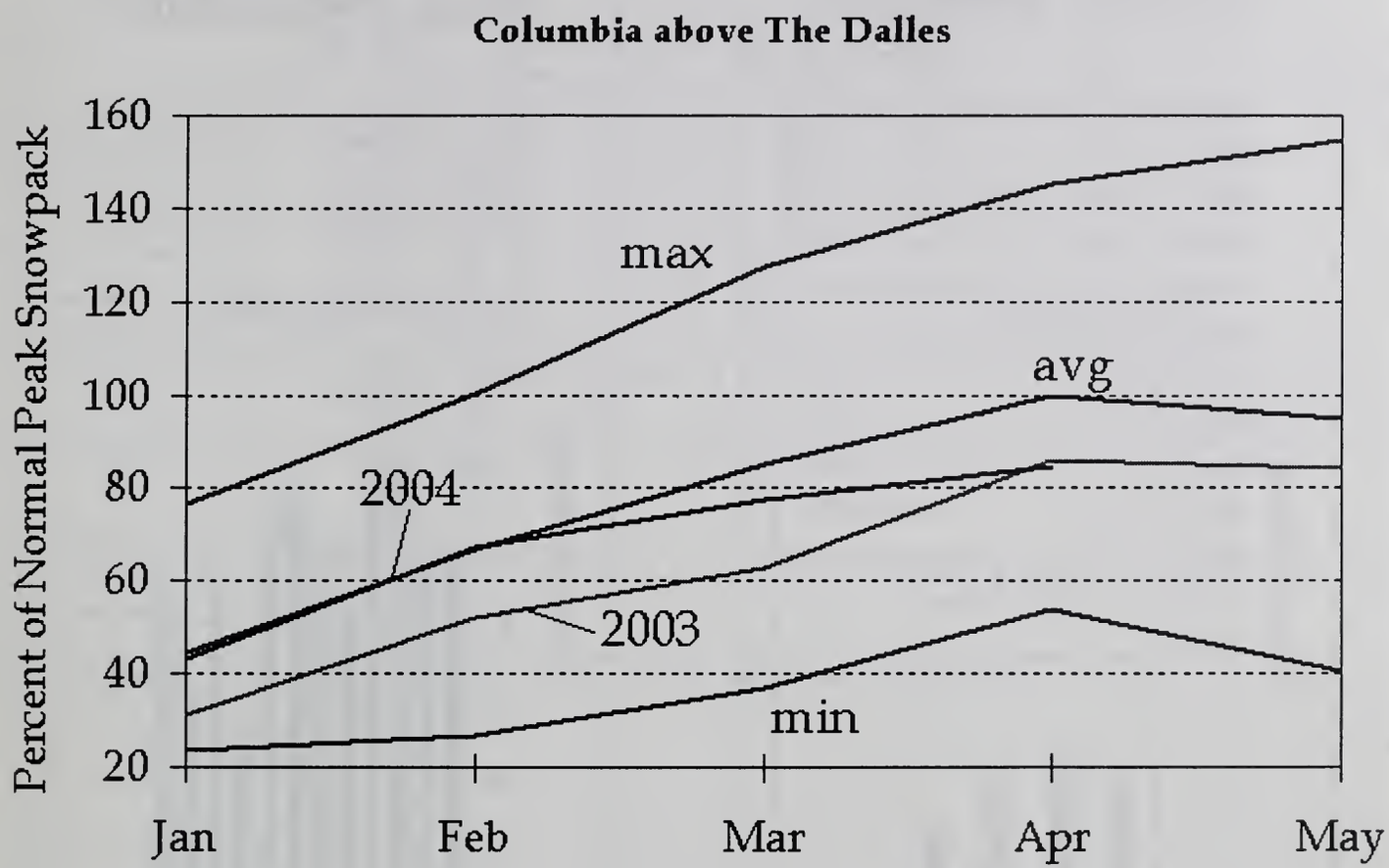
NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

Washington:
http://www.wa.nrcs.usda.gov/nrcs

NRCS National:
http://www.nrcs.usda.gov

Columbia Basin Snowpack Summary



April 7, 2004

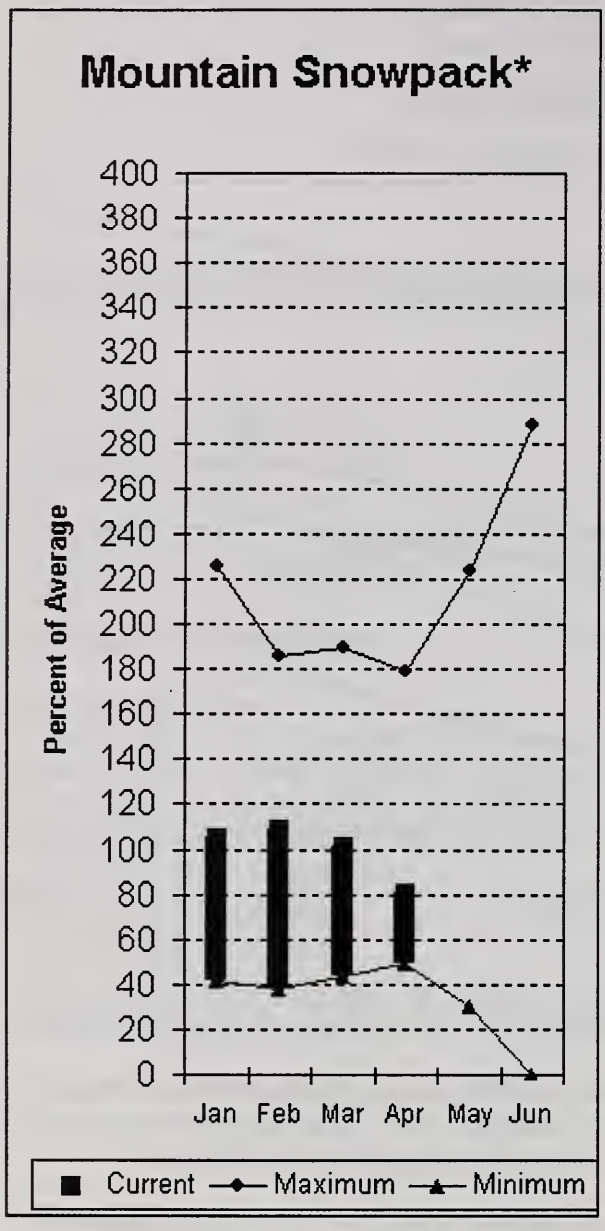
The Columbia Basin snowpack was 85 percent of average on April 1. This compares to 91 percent of average on March 1 and 86 percent of last year at the same time. The overall snowpack is at 85 percent of the average peak accumulation.

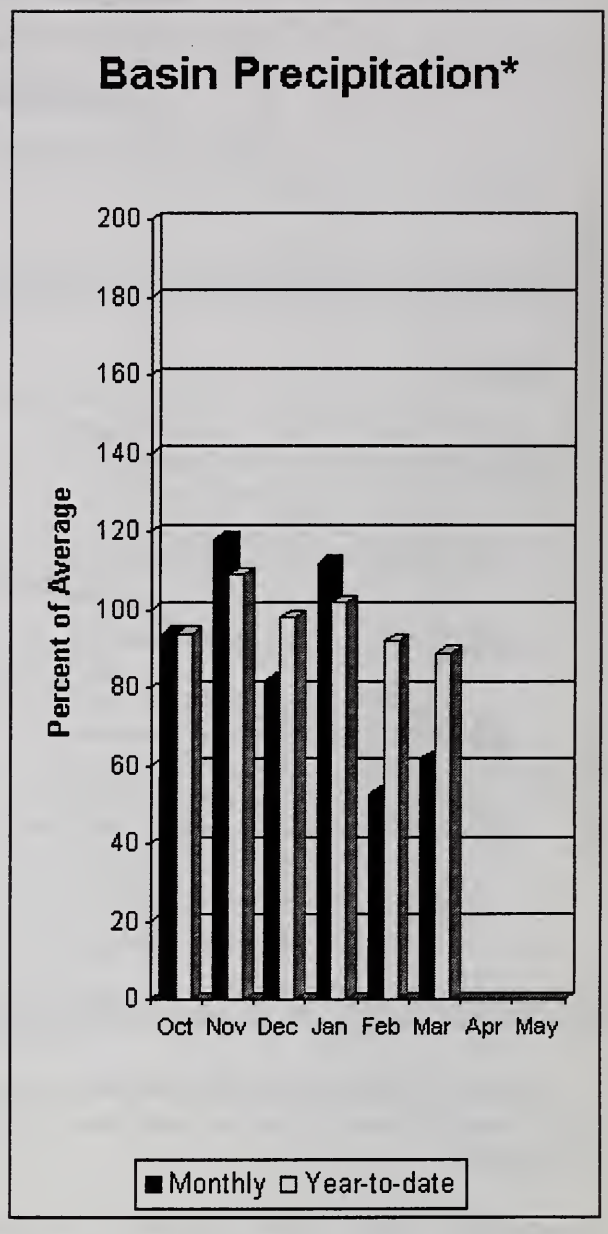
The snowpack in the Columbia Basin above Castlegar was at 87 percent of average on April 1. This compares to 84 percent of average last month and 83 percent last year. For the basin above Grand Coulee, the snowpack was at 85 percent of average, compared to 87 percent for last month and 86 percent last year. The snowpack in the Snake River Basin above Ice Harbor was at 84 percent of average for April 1, compared to 100 percent last month and 94 percent last year.

The big story during March was the rapid and dramatic decrease of the Snake River snowpack, which normally accumulates through the month of March into April. Above normal temperatures ignited rapid snowmelt over the entire Snake River region. This, coupled with negligible precipitation, combined to decimate the snowpack. The Snake snowpack decreased 18 percent during March. The Snake River snowpack wasn't the whole story. The John Day snowpack decreased 46 percent; Deschutes, 28 percent; Boise (part of the Snake), 24 percent; Salmon, 18 percent; Spokane and Pend Oreille, 13 percent. The list goes on and on. The lone, shining star is the Upper Columbia snowpack in Canada, which increased 9 percent. The increased Canadian snowpack prevented a total disaster in the Columbia Basin.

Most streamflow forecasts have been reduced over the Columbia Basin. The April- September forecast for the Columbia River at The Dalles is 77.8 million acre- feet (79 percent), down from 87.4 million acre-feet on March 1 and 93.5 million acre-feet on February 1.

Spokane River Basin





*Based on selected stations

The April 1 forecasts for summer runoff within the Spokane River Basin are 76% of average near Post Falls and 79% at Long Lake. The Chamokane River near Long Lake forecasted to have 63% of average flows for the May-August period. The forecast is based on a basin snowpack that is 81% of average and precipitation that is 89% of average for the water year. Precipitation for March was much below normal at 62% of average. Streamflow on the Spokane River at Long Lake was 79% of average for March. April 1 storage in Coeur d'Alene Lake was 160,500-acre feet, 95% of average and 67% of capacity. Snowpack at Quartz Peak SNOTEL site was 84% of average with 17.9 inches of water content. Temperatures in the Spokane basin were 5 degree above average for the past 28 days and 1 degree above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

SPOKANE RIVER BASIN
Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	1530	1820	2020	76	2220	2510	2650
	APR-JUL	1470	1750	1940	76	2130	2410	2550
SPOKANE at Long Lake (2)	APR-JUL	1640	1980	2210	78	2440	2780	2850
	APR-SEP	1810	2170	2410	79	2650	3010	3070
CHAMOKANE CREEK near Long Lake	MAY-AUG	2.8	4.9	6.4	63	7.9	10.0	10.2

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	160.5	211.5	169.5

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - April 1, 2004

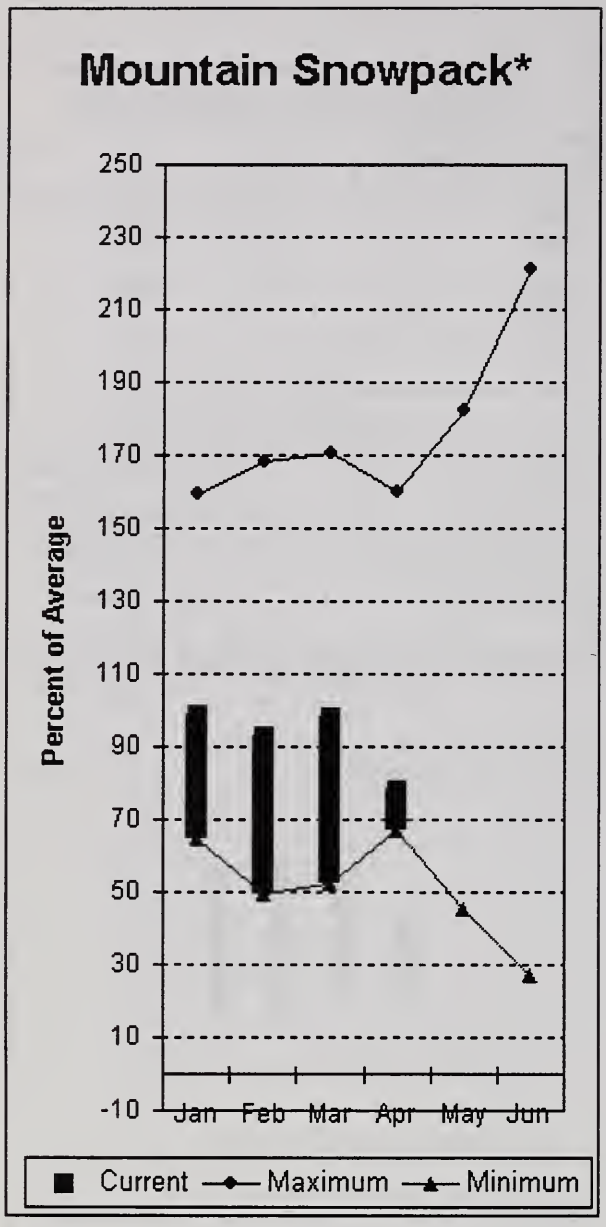
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	13	125	81
NEWMAN LAKE	2	140	75

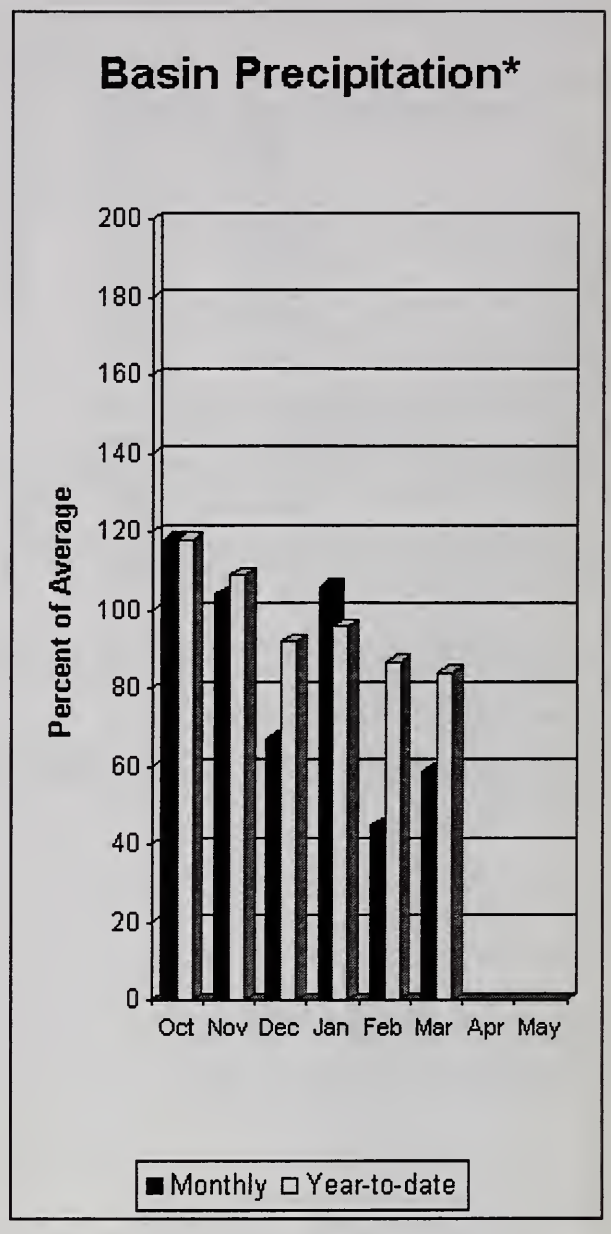
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Colville - Pend Oreille River Basins





*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 83%, Colville at Kettle Falls is 68%, and Priest River near the Town of Priest River is 79%. March streamflow was 84% of average on the Pend Oreille River, 91% on the Columbia at the International Boundary and 62% on the Kettle River. April 1 snow cover was 78% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 25.4 inches of snow water on the snow pillow. Normally Bunchgrass would have 30.2 inches on April 1. Precipitation during March was 59% of average, bringing the year-to-date precipitation to 84% of average. Average temperatures were 5 degree below normal for the past 28 days and 1 degree above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (2)	APR-JUL	7200	8420	9250	73	10080	11300	12700
	APR-SEP	7860	9190	10100	73	11010	12340	13900
PRIEST near Priest River (1,2)	APR-JUL	515	605	645	79	685	775	815
	APR-SEP	465	615	685	79	755	900	870
PEND OREILLE bl Box Canyon (2)	APR-JUL	7650	8770	9530	74	10290	11410	12900
	APR-SEP	8160	9490	10400	74	11310	12640	14100
COLVILLE at Kettle Falls	APR-SEP	60	81	96	68	111	132	141
	APR-JUL	53	73	86	67	99	119	128
KETTLE near Laurier	APR-SEP	1340	1510	1630	83	1750	1920	1970
	APR-JUL	1300	1450	1550	83	1650	1800	1870
COLUMBIA at Birchbank (1,2)	APR-JUL	27608	30491	31800	91	33110	35990	34900
	APR-SEP	34349	37960	39600	91	41240	44850	43500
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	46952	52830	55500	87	58170	64050	64000
	APR-JUL	39632	44561	46800	87	49040	53970	53800

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT		NO REPORT		
BANKS		NO REPORT		

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

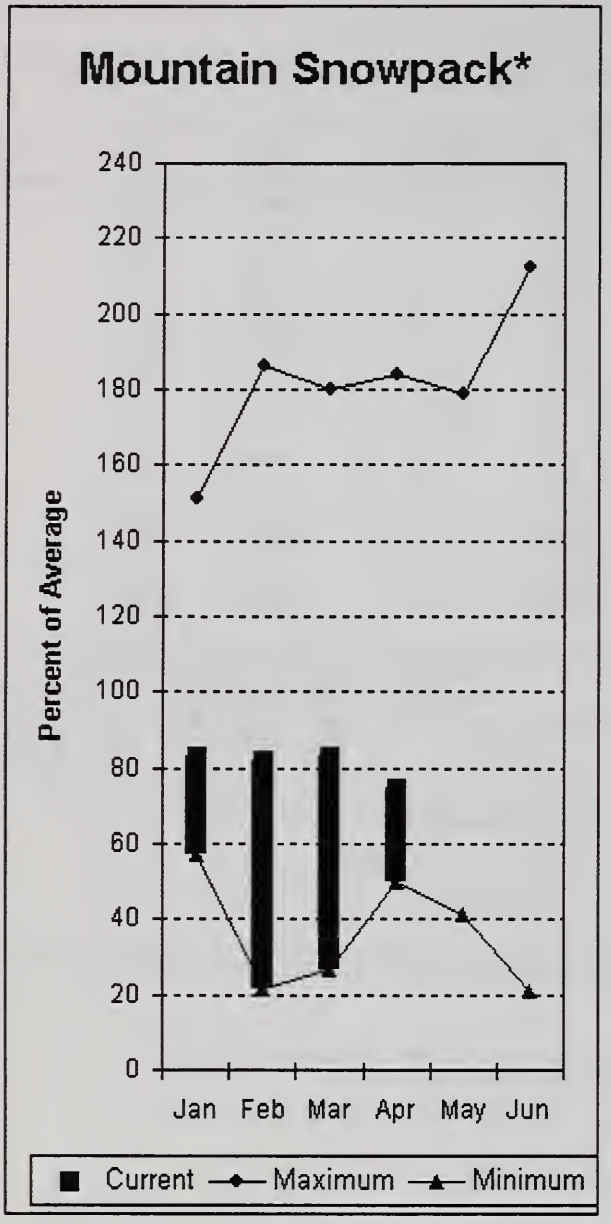
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	1	117	75
PEND OREILLE RIVER	10	93	81
KETTLE RIVER	7	98	85

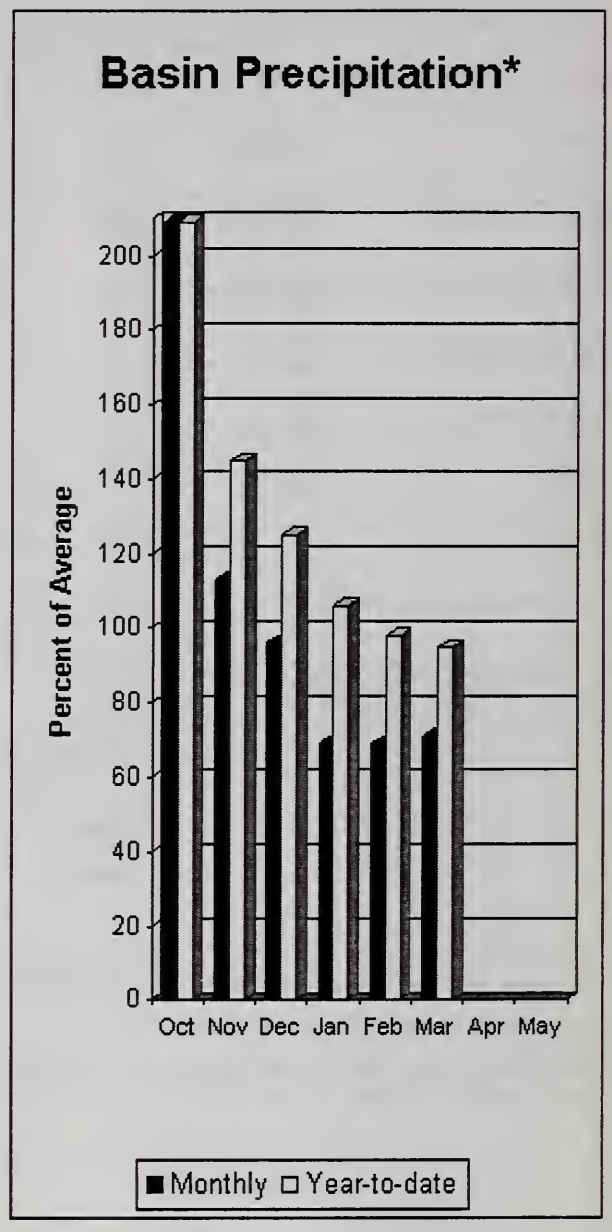
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Okanogan - Methow River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 68%, Similkameen River is 72%, Methow River is 73% and Salmon Creek is 62%. April 1 snow cover on the Okanogan was 82% of average, Omak Creek was 66% and the Methow was 72%. March precipitation in the Okanogan-Methow was 71% of average, with precipitation for the water year at 95% of average. March streamflow for the Methow River was 149% of average, 63% for the Okanogan River and 111% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 8 inches. Average for this site is 11.1 inches on April 1. Combined storage in the Conconully Reservoirs was 10,700-acre feet, which is 46% of capacity and 61% of the April 1 average. Temperatures were 4 degrees above average for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-JUL	650	870	970	72	1070	1290	1350
	APR-SEP	670	930	1040	72	1150	1410	1450
OKANOGAN near Tonasket (1)	APR-JUL	520	910	1080	68	1250	1640	1580
	APR-SEP	650	1040	1210	68	1380	1770	1770
SALMON CREEK near Conconully	APR-JUL	11.8	12.4	12.9	65	13.4	14.0	20
	APR-SEP	11.8	12.5	13.0	62	13.5	14.2	21
BEAVER CREEK below SF near Twisp	APR-SEP	4.7	7.3	9.0	74	10.7	13.3	12.1
	APR-JUL	4.3	6.8	8.5	77	10.2	12.7	11.1
METHOW RIVER near Pateros	APR-SEP	525	640	715	73	790	905	985
	APR-JUL	595	660	700	77	740	805	910

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	5.0	3.1	8.4
CONCONULLY RESERVOIR	13.0	5.7	4.2	9.2

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

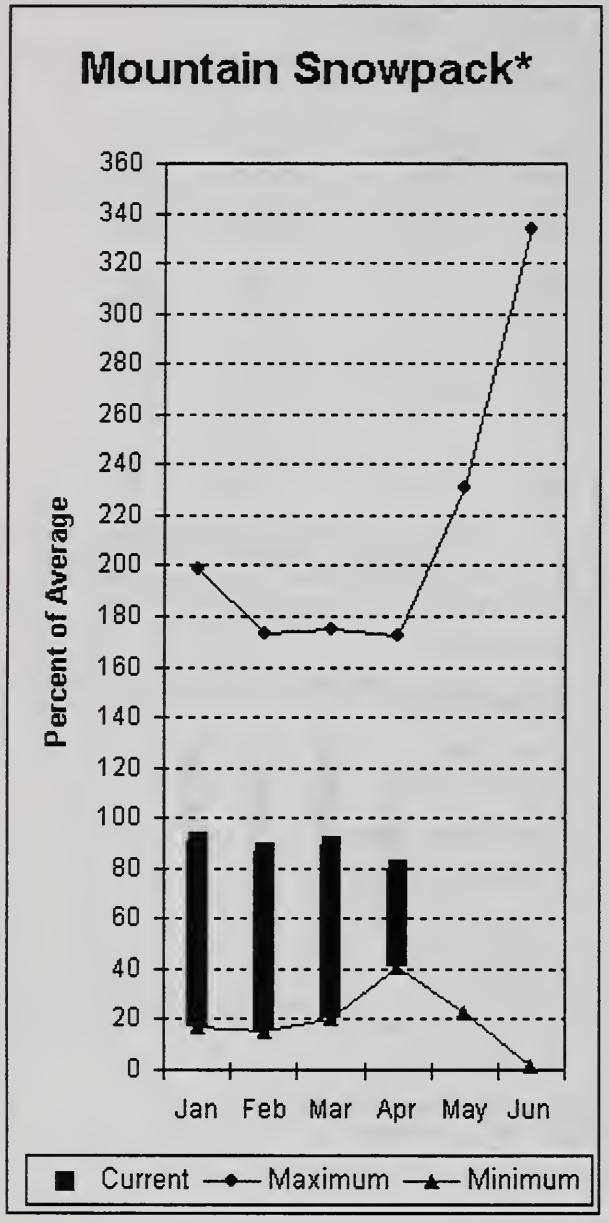
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	17	113	82
OMAK CREEK	1	70	66
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	2	113	83
TOATS COULEE CREEK	1	0	0
CONCONULLY LAKE	3	74	71
METHOW RIVER	5	104	72

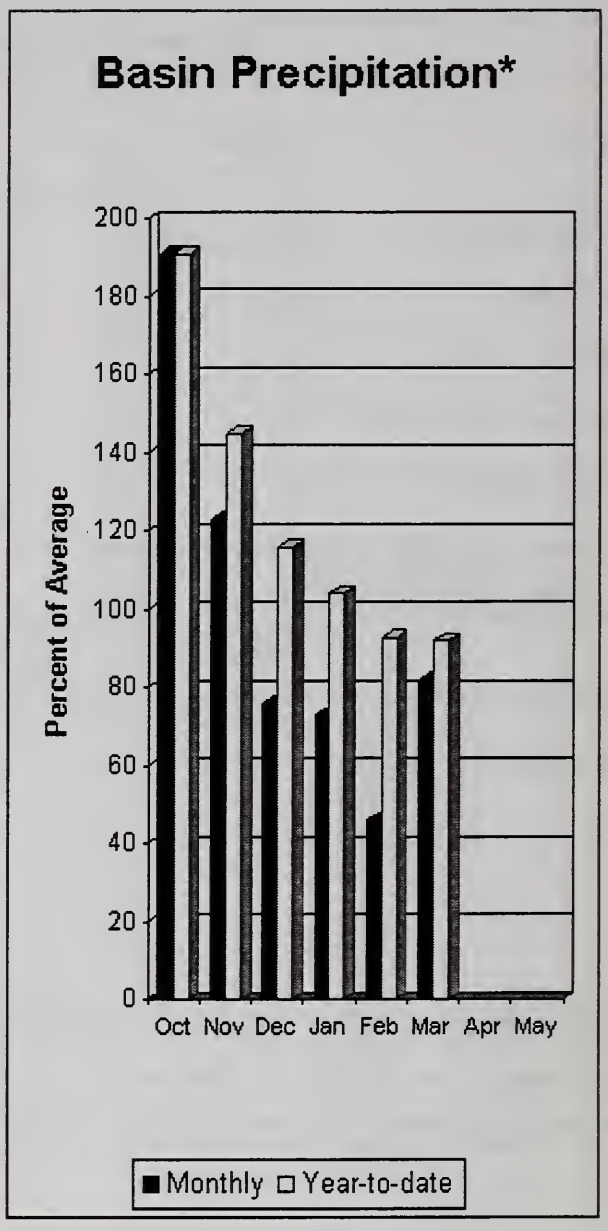
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during March was 82% of average in the basin and 92% for the year-to-date. Runoff for Entiat River is forecast to be 70% of average for the summer. The April-September average forecast for Chelan River is 74%, Wenatchee River at Plain is 75%, Stehekin is 77%, Icicle Creek is 88% and Stemilt Creek 98%. March average streamflows on the Chelan River were 140% and on the Wenatchee River 121%. April 1 snowpack in the Wenatchee River Basin was 72% of average; the Chelan, 70%; the Entiat, 49%; Stemilt Creek, 120% and Colockum Creek, 87%. Reservoir storage in Lake Chelan was 283,800-acre feet, 131% of April 1 average and 42% of capacity. Park Creek Ridge SNOTEL had the most snow water with 36.2 inches of water. This site would normally have 47.6 inches on April 1. Temperatures were 3-4 degrees above normal for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	750	830	885	74	945	1025	1190
	APR-JUL	665	735	780	74	825	895	1050
STEHEKIN near STEHEKIN	APR-SEP	540	595	635	77	675	730	830
	APR-JUL	460	505	535	76	565	610	700
ENTIAT RIVER nr Ardenvoir	APR-SEP	146	161	169	70	178	192	240
	APR-JUL	135	146	155	72	163	174	215
WENATCHEE at Plain	APR-SEP	760	845	905	75	965	1050	1200
	APR-JUL	720	790	835	77	880	950	1080
WENATCHEE R. at Peshastin	APR-SEP	823	1065	1230	75	1395	1635	1640
	APR-JUL	644	921	1110	75	1299	1575	1480
STEMILT CK nr Wenatchee (miner's in)	MAY-SEP	96	119	135	98	151	174	138
ICICLE CREEK near Leavenworth	APR-SEP	265	290	305	88	320	345	345
	APR-JUL	250	265	280	88	295	310	320
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	53022	57355	60300	87	63240	67580	69500
	APR-JUL	43424	48114	51300	87	54490	59180	59000

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	283.8	284.2	216.3

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

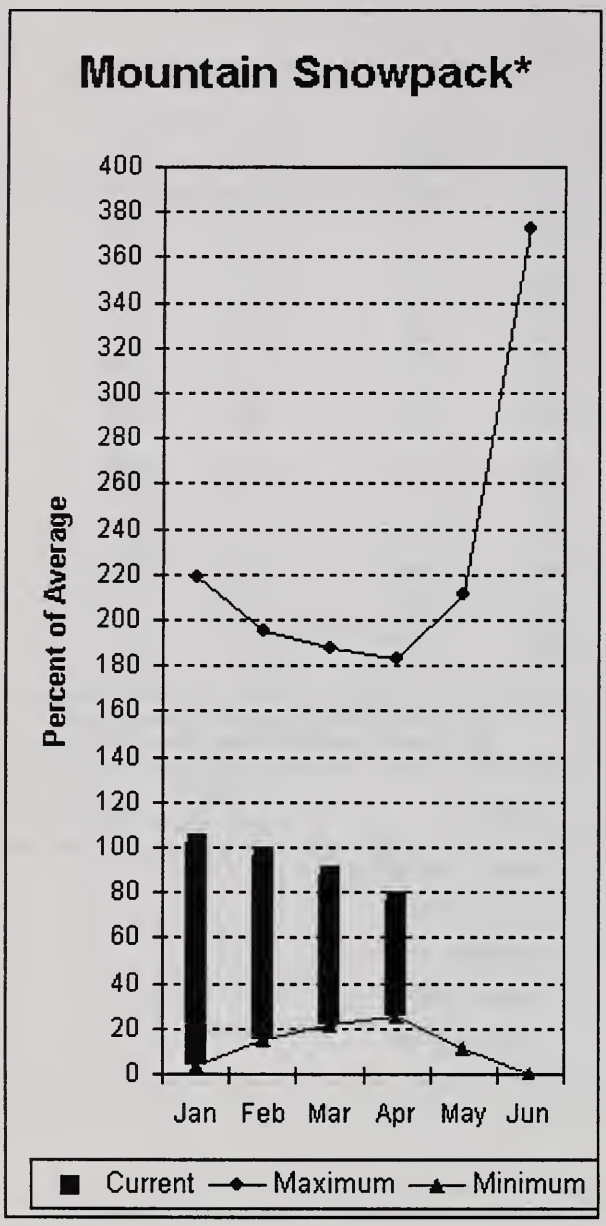
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	4	89	70
ENTIAT RIVER	2	67	49
WENATCHEE RIVER	13	96	72
STEMILT CREEK	1	126	120
COLOCKUM CREEK	2	83	87

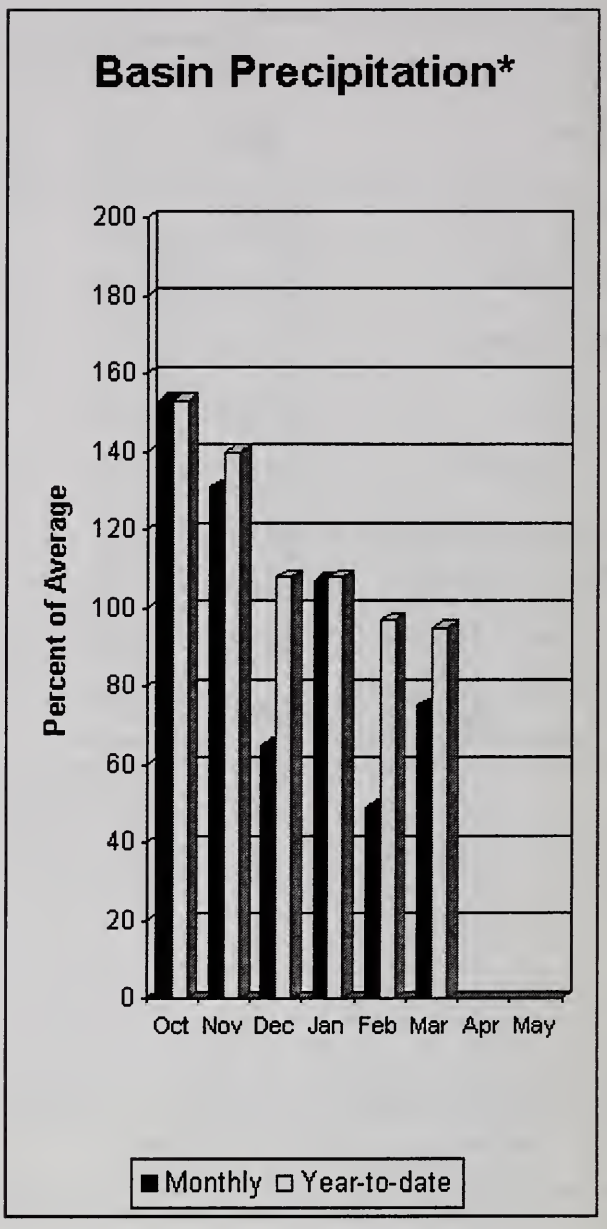
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin





*Based on selected stations

April 1 reservoir storage for the Upper Yakima reservoirs was 432,100-acre feet, 78% of average. Forecasts for the Yakima River at Cle Elum are 79% of average and the Teanaway River near Cle Elum is at 72%. Lake inflows are all forecasted to be in the 78% - 79% range this summer. March streamflows within the basin were Yakima near Cle Elum at 120% and Cle Elum River near Roslyn at 124%. April 1 snowpack was 76% based upon 12 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 75% of average for March and 95% year-to-date. Temperatures were 4 degrees above normal for the past 28 days and near average for the water year. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
KEECHELUS LAKE INFLOW	APR-JUL	78	88	95	79	102	112	121
	APR-SEP	85	97	105	79	113	125	133
KACHESS LAKE INFLOW	APR-JUL	77	85	90	81	95	103	111
	APR-SEP	80	89	95	79	101	110	120
CLE ELUM LAKE INFLOW	APR-JUL	285	305	320	78	335	355	410
	APR-SEP	310	335	350	78	365	390	450
YAKIMA at Cle Elum	APR-JUL	570	610	640	78	670	710	820
	APR-SEP	630	680	710	79	740	790	900
TEANAWAY near Cle Elum	APR-JUL	83	95	103	72	111	123	143
	APR-SEP	69	90	105	72	120	141	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	85.0	76.7	114.1
KACHESS	239.0	132.8	177.8	169.4
CLE ELUM	436.9	214.3	267.0	270.1

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2004

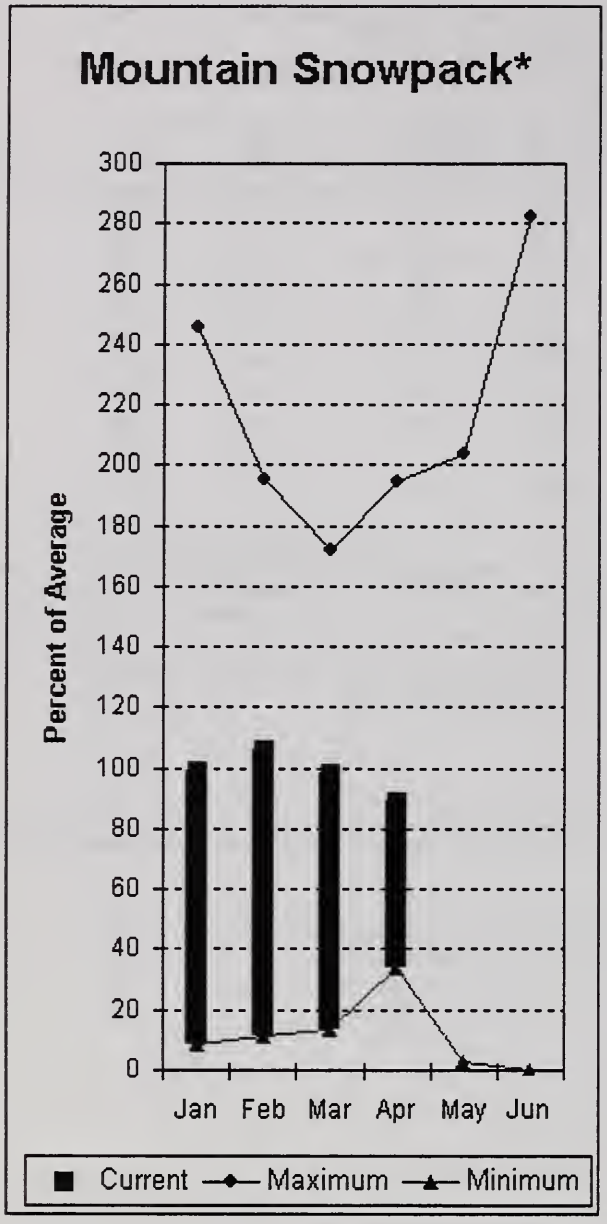
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER YAKIMA RIVER	12	104	76

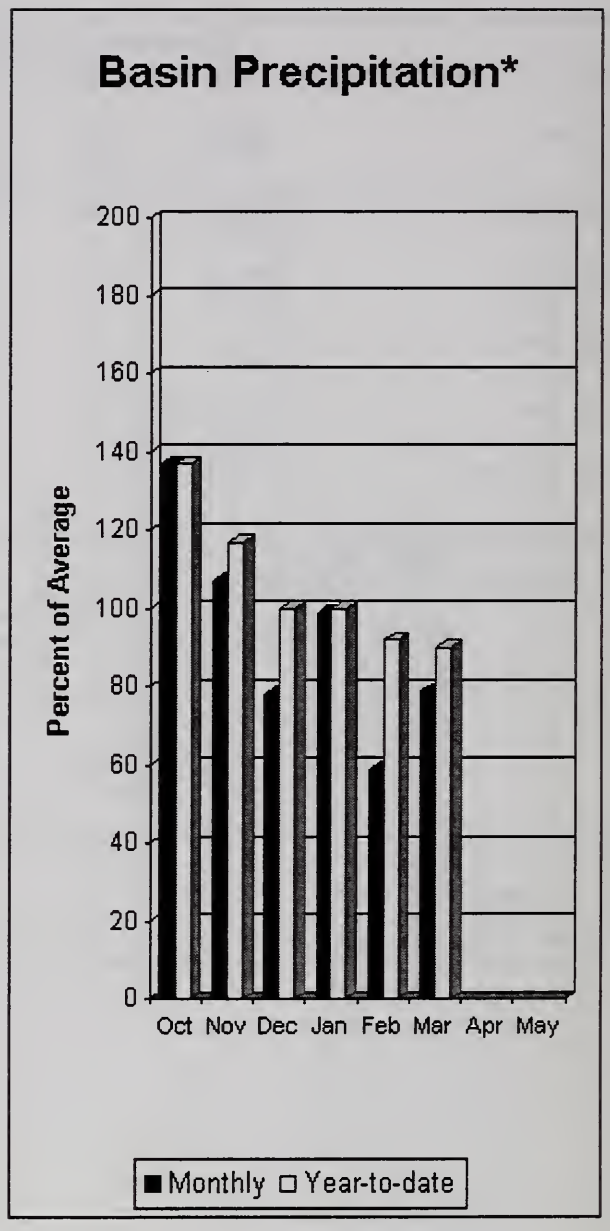
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin





*Based on selected stations

March average streamflows within the basin were: Yakima River near Parker, 104%; Naches River near Naches, 102%; and Yakima River at Kiona, 91%. April 1 reservoir storage for Bumping and Rimrock reservoirs was 129,600-acre feet, 78% of average. Forecast averages for Yakima River near Parker are 80%; American River near Nile, 84%; Ahtanum Creek, 85%; and Klickitat River near Glenwood, 77%. April 1 snowpack was 89% based upon 8 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 79% of average for March and 90% year-to-date for water. Temperatures were 4 degrees above normal for the past 28 days and 1 degree above average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
BUMPING LAKE INFLOW	APR-SEP	99	107	112	85	117	125	132
	APR-JUL	92	99	104	85	109	116	122
AMERICAN RIVER near Nile	APR-SEP	87	94	99	84	104	111	118
	APR-JUL	78	85	90	83	95	102	108
RIMROCK LAKE INFLOW	APR-SEP	180	195	205	85	215	230	240
	APR-JUL	156	167	175	85	183	194	205
NACHES near Naches	APR-SEP	620	665	695	83	725	770	840
	APR-JUL	565	605	635	84	665	705	760
AHTANUM CREEK nr Tampico (2)	APR-SEP	22	32	39	85	46	56	46
	APR-JUL	21	30	36	86	42	51	42
YAKIMA near Parker	APR-SEP	1370	1470	1540	80	1610	1710	1920
	APR-JUL	1240	1330	1390	80	1450	1540	1730
KLICKITAT near Glenwood	APR-JUN	85	94	100	78	106	115	129
	APR-SEP	103	116	125	77	134	147	163

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	13.9	29.8	13.1
RIMROCK	198.0	115.7	168.2	138.5

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2004

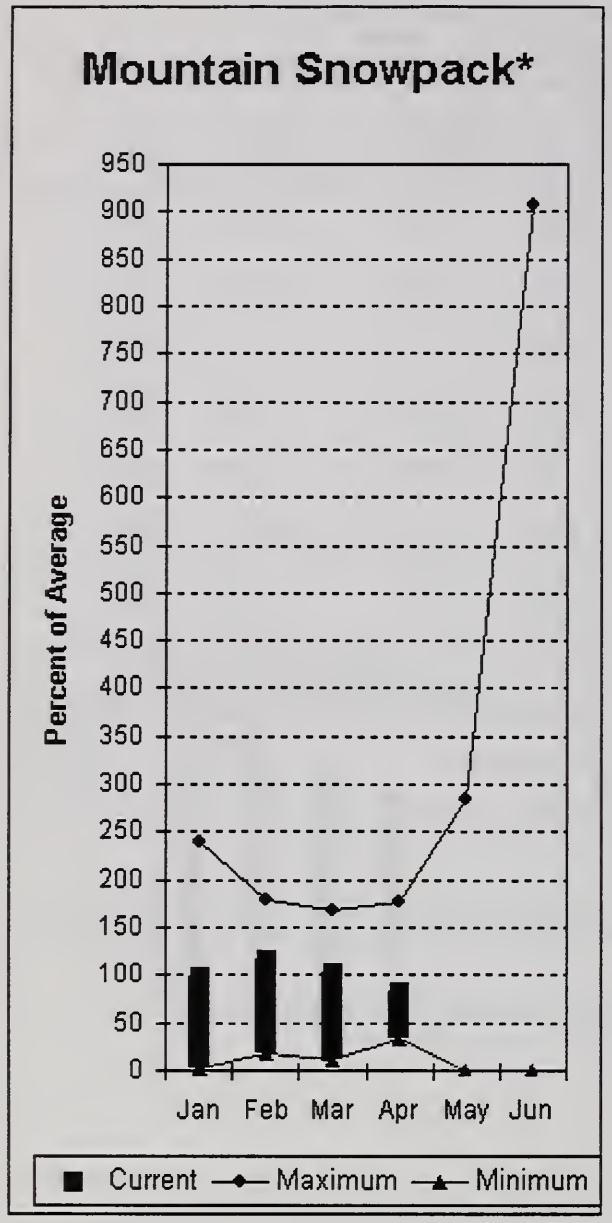
Watershed	Number of Data Sites	This Year as % of Last Yr	Average

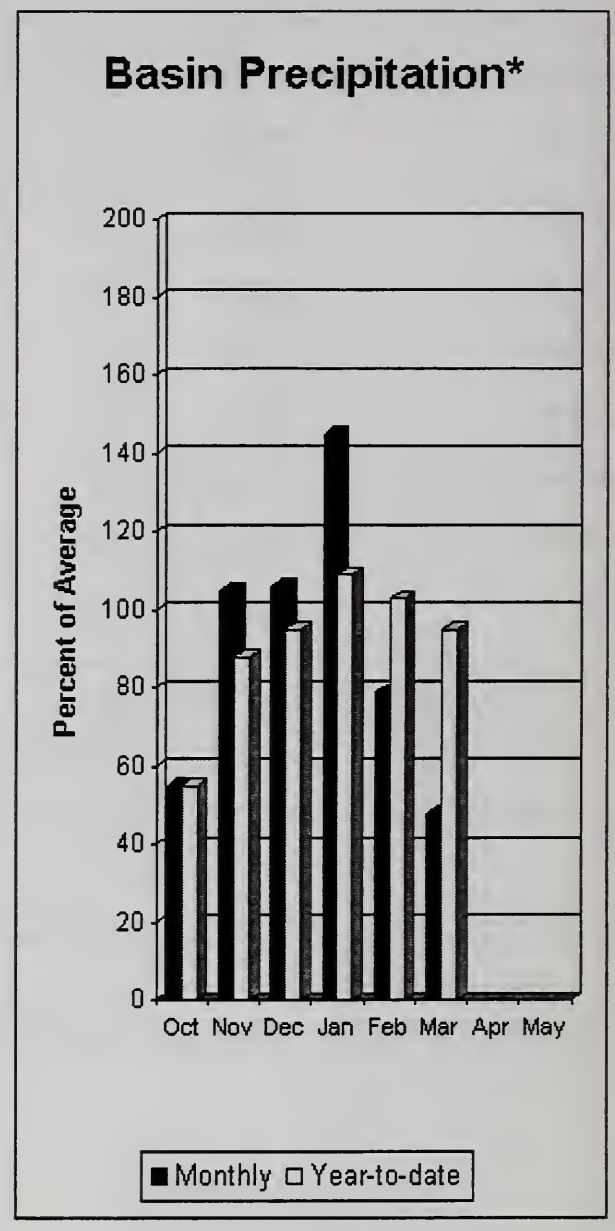
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Walla Walla River Basin





*Based on selected stations

March precipitation was 48% of average, maintaining the year-to-date precipitation at 95% of average. Snowpack in the basin was 84% of average. Streamflow forecasts are 87% of average for Mill Creek and 84% for the SF Walla Walla near Milton-Freewater. March streamflow was 169% of average for the Walla Walla River. Average temperatures were 7 degrees above normal for the past 28 days and 1 degree above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MILL CREEK at Walla Walla	APR-SEP	10.0	14.0	16.0	87	18.0	22	18.4
	APR-JUL	9.9	13.9	15.9	87	17.9	22	18.2
SF WALLA WALLA near Milton-Freewater	APR-JUL	37	42	45	83	48	53	54
	APR-SEP	47	52	56	84	60	65	67

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	115	84

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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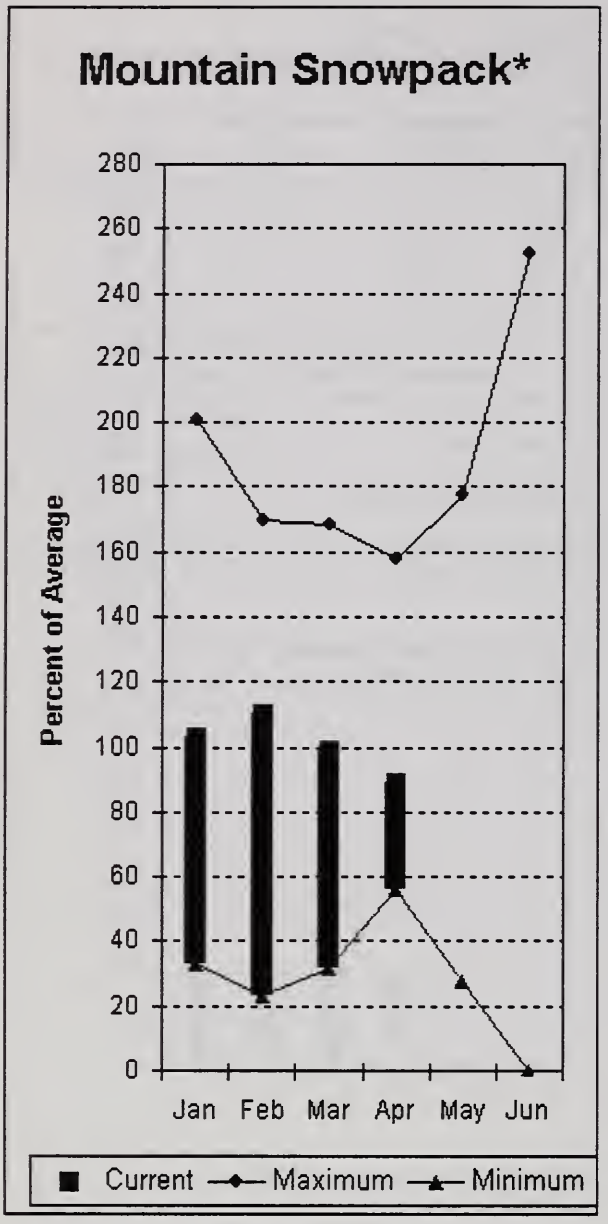
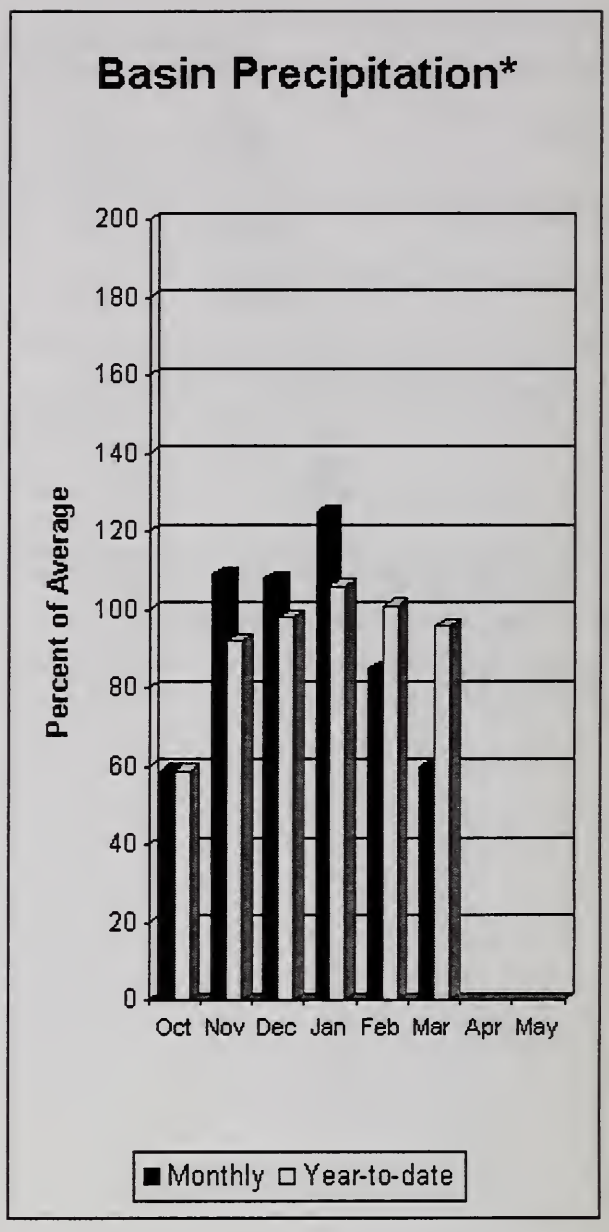
Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 81% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 77% of normal. March precipitation was 60% of average, bringing the year-to-date precipitation to 96% of average. April 1 snowpack readings averaged 89% of normal. March streamflow was 77% of average for Snake River below Lower Granite Dam and 111% for Grande Ronde River near Troy. Average temperatures were 6 degrees above normal for the past 28 days and 2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	APR-JUL	769	1003	1110	87	1217	1450	1270
	APR-SEP	822	1075	1190	87	1305	1560	1370
CLEARWATER at Spalding (1,2)	APR-JUL	4230	5450	6010	81	6570	7790	7430
	APR-SEP	4560	5780	6340	81	6900	8120	7850
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	10684	14065	15600	72	17140	20520	21600
	APR-SEP	11875	15674	17400	72	19130	22930	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER SNAKE, GRANDE RONDE	17	103	87

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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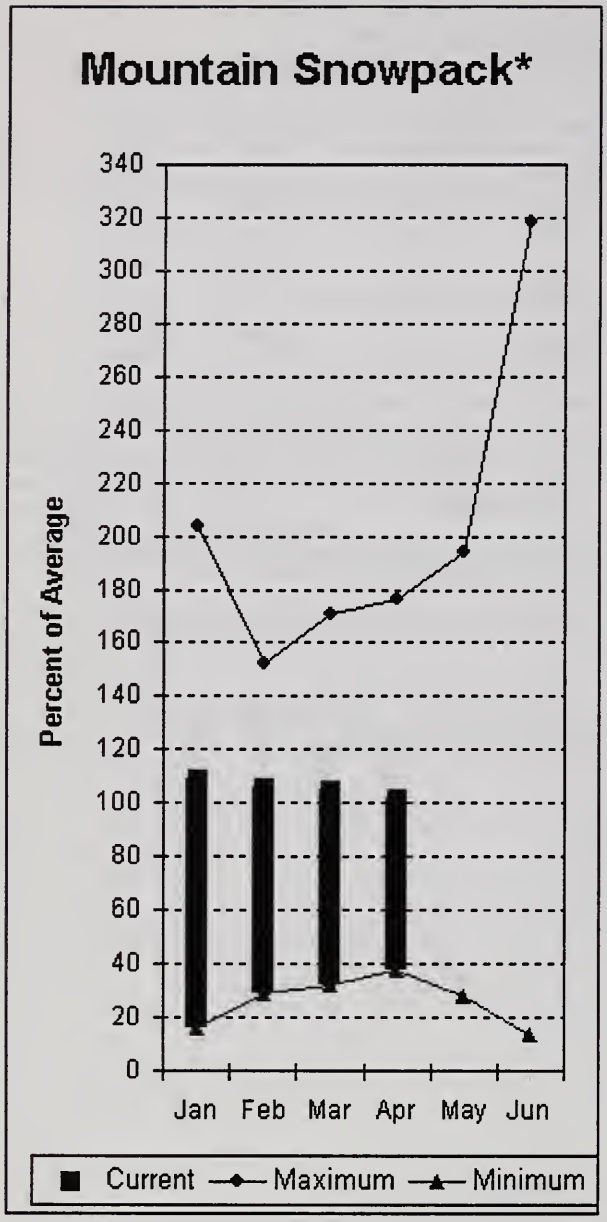
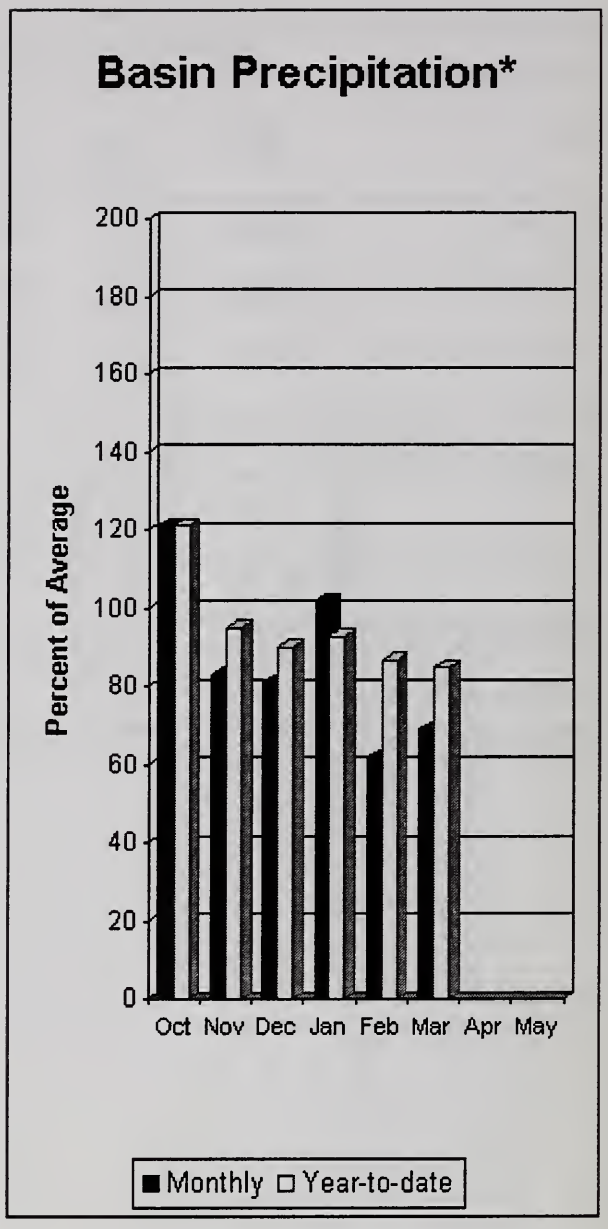
Cowlitz - Lewis River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 89% and Cowlitz River at Castle Rock, 87% of average. The Columbia River at The Dalles is forecasted to have 79%of average flows this summer. March average streamflow for Cowlitz River was 79% and 81% for Lewis River. The Columbia River at The Dalles was at 83% of average. March precipitation was 69% of average and the water-year average was 85%. April 1 snow cover for Cowlitz River was 96%, and Lewis River was 109% of average. Average temperatures were 3-4 degrees above normal during the past 28 days and 1 degree above normal throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-JUL	653	818	930	90	1042	1207	1031
	APR-SEP	766	935	1050	89	1165	1334	1176
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	818	1337	1690	88	2043	2562	1922
	APR-JUL	616	1136	1490	88	1844	2364	1689
COWLITZ R. at Castle Rock (2)	APR-SEP	1092	1811	2300	87	2789	3508	2639
	APR-JUL	1163	1661	2000	87	2339	2837	2295
KLICKITAT near Glenwood	APR-JUN	85	94	100	78	106	115	129
	APR-SEP	103	116	125	77	134	147	163
COLUMBIA R. at The Dalles (2)	APR-SEP	67308	73555	77800	79	82040	88290	98600
	APR-JUL	55563	62254	66800	79	71350	78040	84600

COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	169	109
COWLITZ RIVER	6	124	96

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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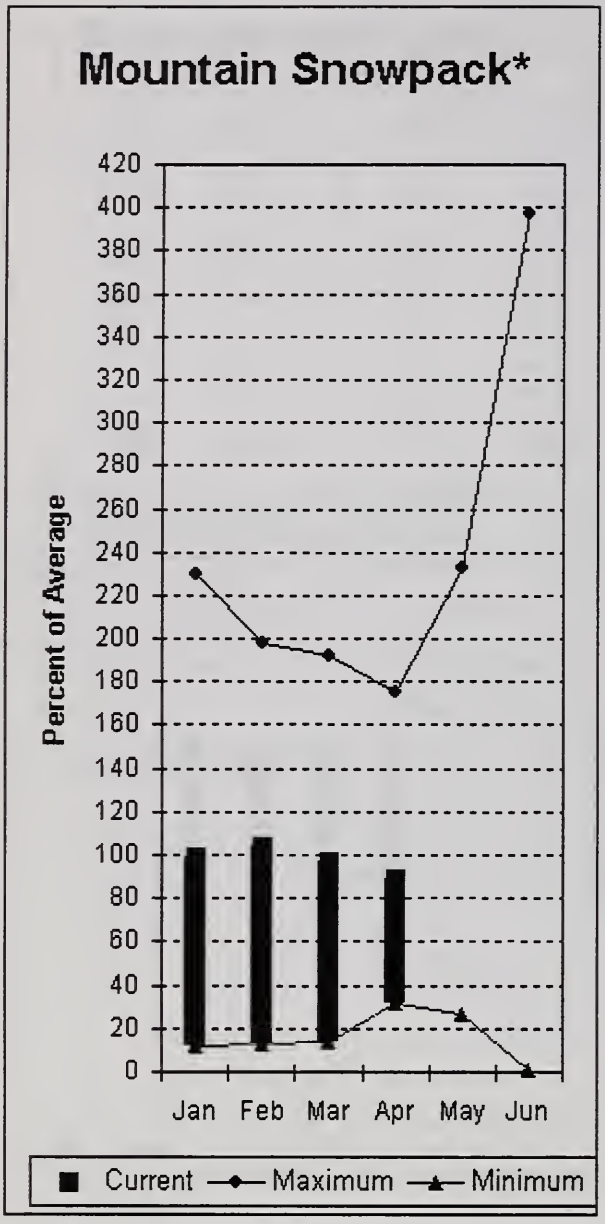
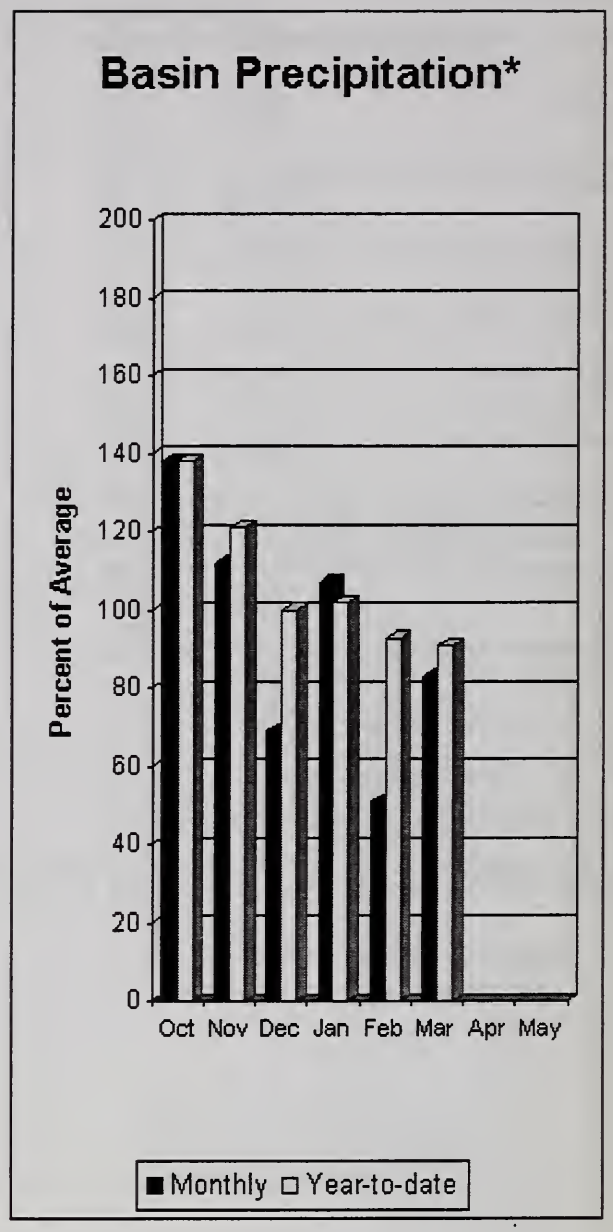
White - Green River Basins





*Based on selected stations

Summer runoff is forecast to be 90% of normal for the Green River below Howard Hanson Dam and 94% for the White River near Buckley. April 1 snowpack was 91% of average in both White River and Puyallup River basins and 87% in Green River Basin. Water content on April 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 35.6 inches. This site has an April 1 average of 34.9 inches. March precipitation was 83% of average, bringing the water year-to-date to 91% of average for the basins. Average temperatures in the area were 3 degree above normal for the past 28 days and near normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WHITE near Buckley (1,2)	APR-JUL	334	386	410	93	434	486	440
	APR-SEP	412	473	500	94	527	588	534
GREEN below Howard Hanson (1,2)	APR-JUL	172	205	220	91	235	268	243
	APR-SEP	187	224	240	90	256	293	268

WHITE - GREEN - PUYALLUP RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WHITE - GREEN - PUYALLUP RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	101	91
GREEN RIVER	7	136	87
PUYALLUP RIVER	3	101	91

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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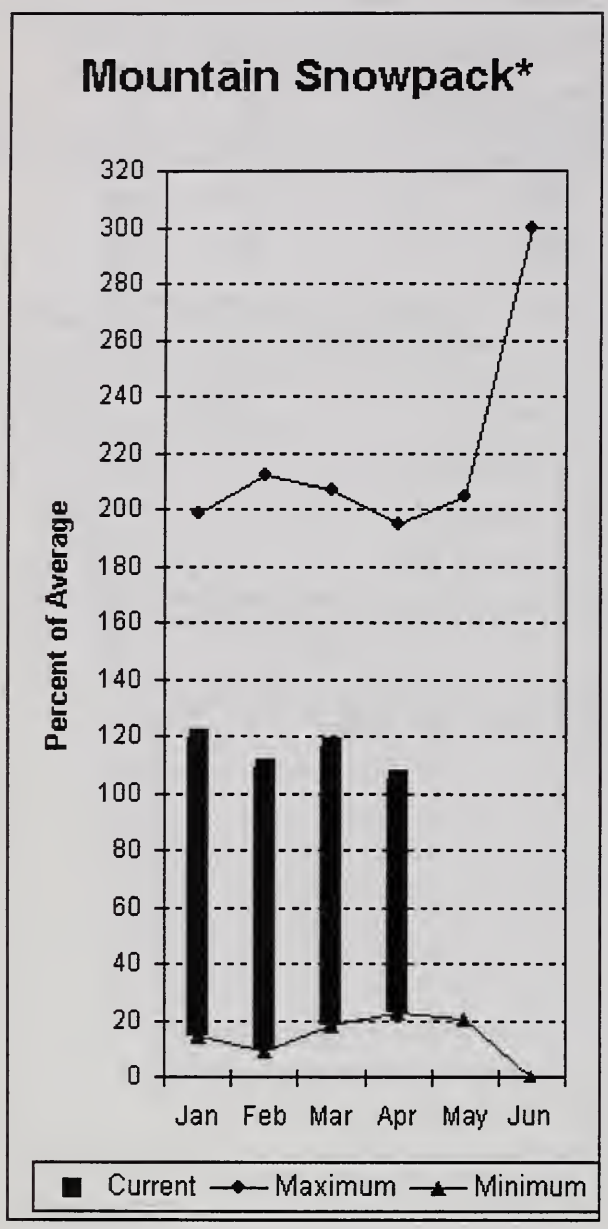
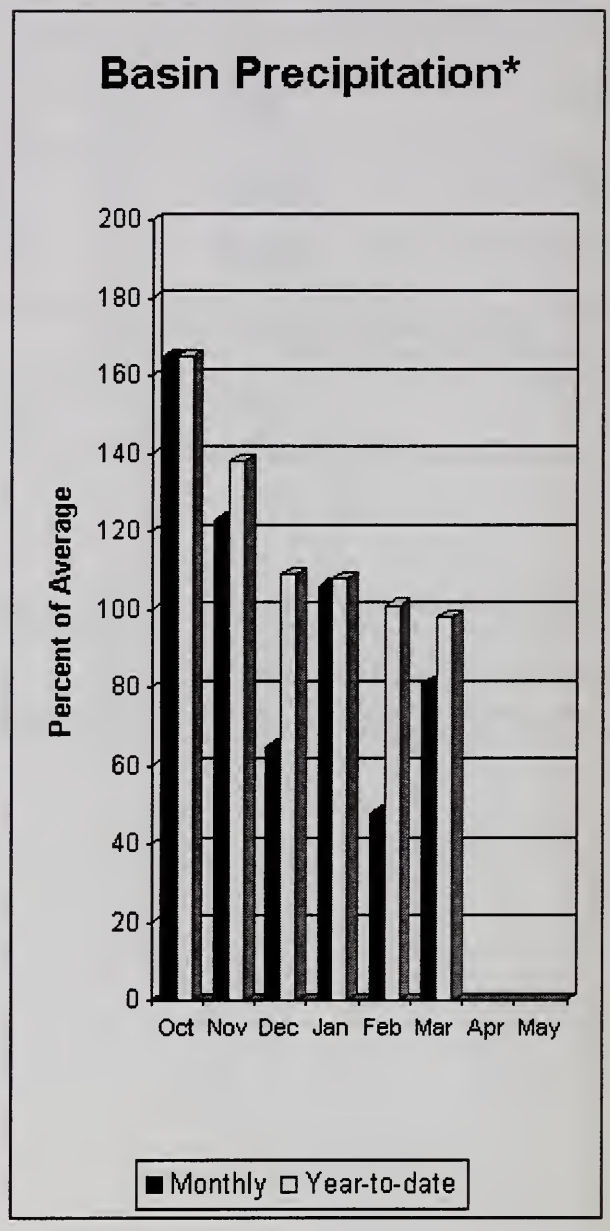
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 85% for Cedar River near Cedar Falls; 86% for Rex River; 89% for South Fork of the Tolt River; and 88% for Cedar River at Cedar Falls. Basin-wide precipitation for March was 81% of average, bringing water-year-to-date to 98% of average. April 1 average snow cover in Cedar River Basin was 86%, Tolt River Basin was 126%, Snoqualmie River Basin was 102%, and Skykomish River Basin was 105%. Alpine Meadows SNOTEL site, at 3500 feet, had 56.7 inches of water content. Average April 1 water content is 43.6 inches at Olallie Meadows. Temperatures were 3 degree above average for the past 28 days and near normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR near Cedar Falls	APR-JUL	48	56	62	85	68	76	73
	APR-SEP	53	62	68	85	74	84	80
REX near Cedar Falls	APR-JUL	14.3	18.3	21	84	24	28	25
	APR-SEP	16.7	21	24	86	27	31	28
CEDAR RIVER at Cedar Falls	APR-JUL	44	56	65	88	74	86	74
	APR-SEP	45	56	64	88	72	83	73
SOUTH FORK TOLT near Index	APR-JUL	10.6	12.0	13.0	88	14.0	15.4	14.7
	APR-SEP	11.9	13.8	15.0	89	16.2	18.1	16.9

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	5	175	86
TOLT RIVER	3	296	126
SNOQUALMIE RIVER	6	173	102
SKYKOMISH RIVER	4	177	105

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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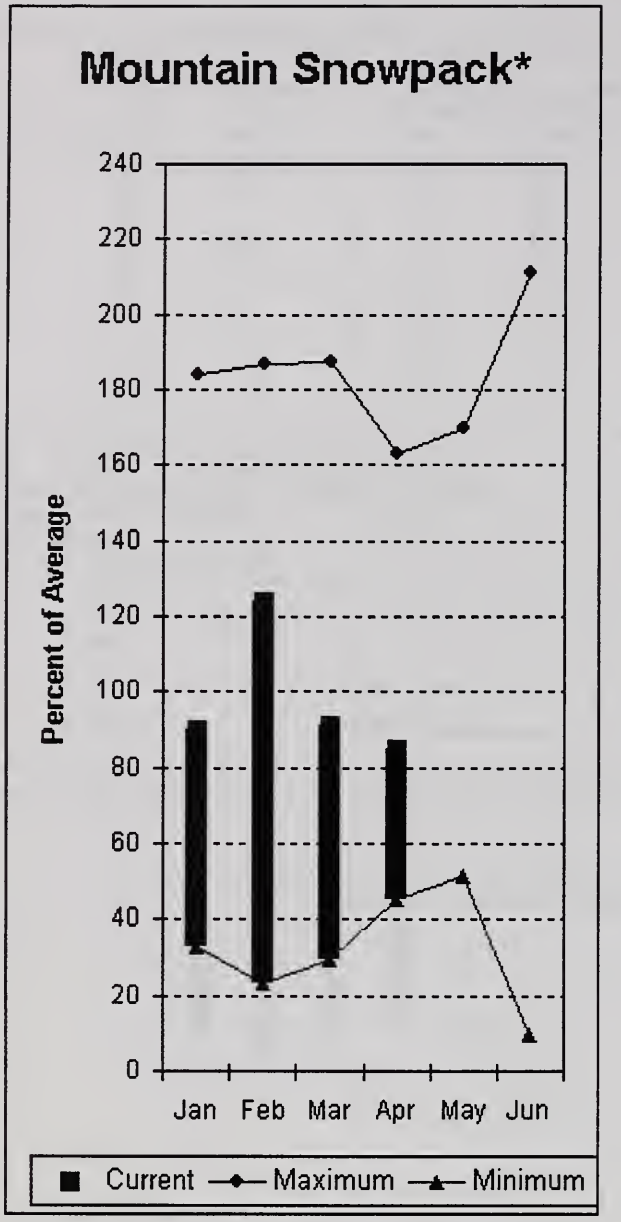
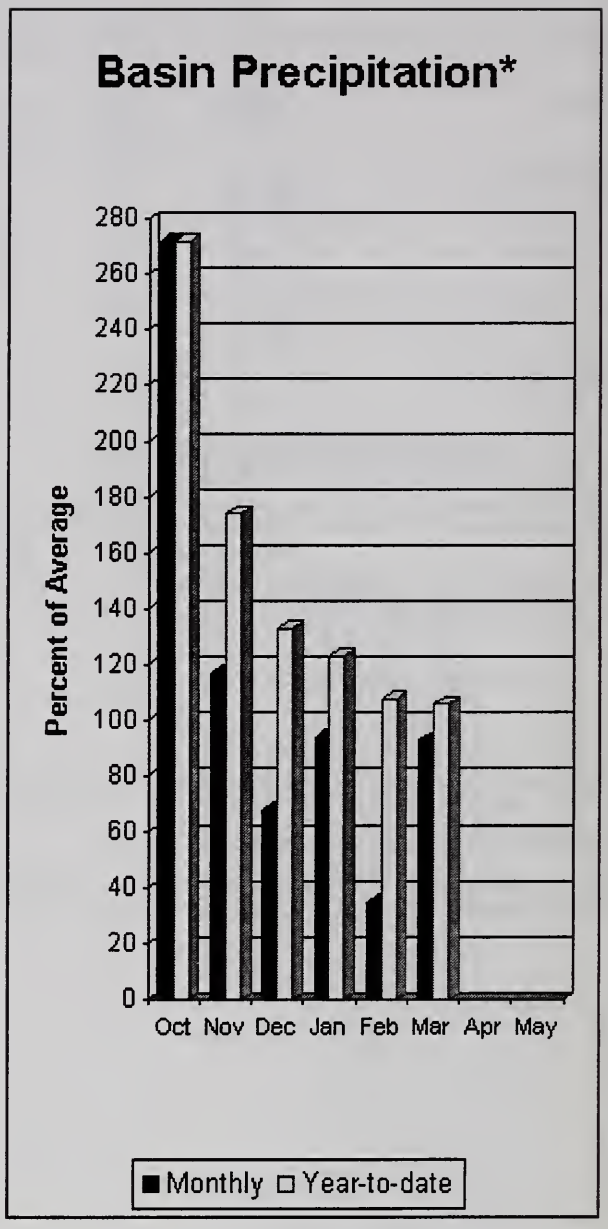
(2) - The value is natural volume - actual volume may be affected by upstream water management.

North Puget Sound River Basins





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 86% of average for the spring and summer period. March streamflow in Skagit River was 77% of average. Other forecast points included Baker River at 87% and Thunder Creek at 87% of average. Basin-wide precipitation for March was 93% of average, bringing water-year-to-date to 106% of average. April 1 average snow cover in Skagit River Basin was 77%, Baker River Basin was at 77% and Nooksack River Basin was 100%. Rainy Pass SNOTEL, at 4,780 feet, had 30.4 inches of water content. Average April 1 water content is 44 inches at Rainy Pass. April 1 Skagit River reservoir storage was 102% of average and 54% of capacity. Average temperatures for the past 28 days were 3-4 degrees above normal for the basin and 1 degree above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	178	194	205	88	216	232	234
	APR-SEP	261	278	290	87	302	319	333
SKAGIT at Newhalem (2)	APR-JUL	1439	1544	1615	87	1686	1786	1864
	APR-SEP	1690	1815	1900	86	1985	2110	2217
BAKER RIVER near Concrete	APR-JUL	600	659	700	85	741	800	828
	APR-SEP	787	860	910	87	960	1033	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	710.3	970.9	693.0
DIABLO RESERVOIR	90.6	87.3	85.8	86.2
GORGE RESERVOIR	9.8	7.7	8.1	8.0

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

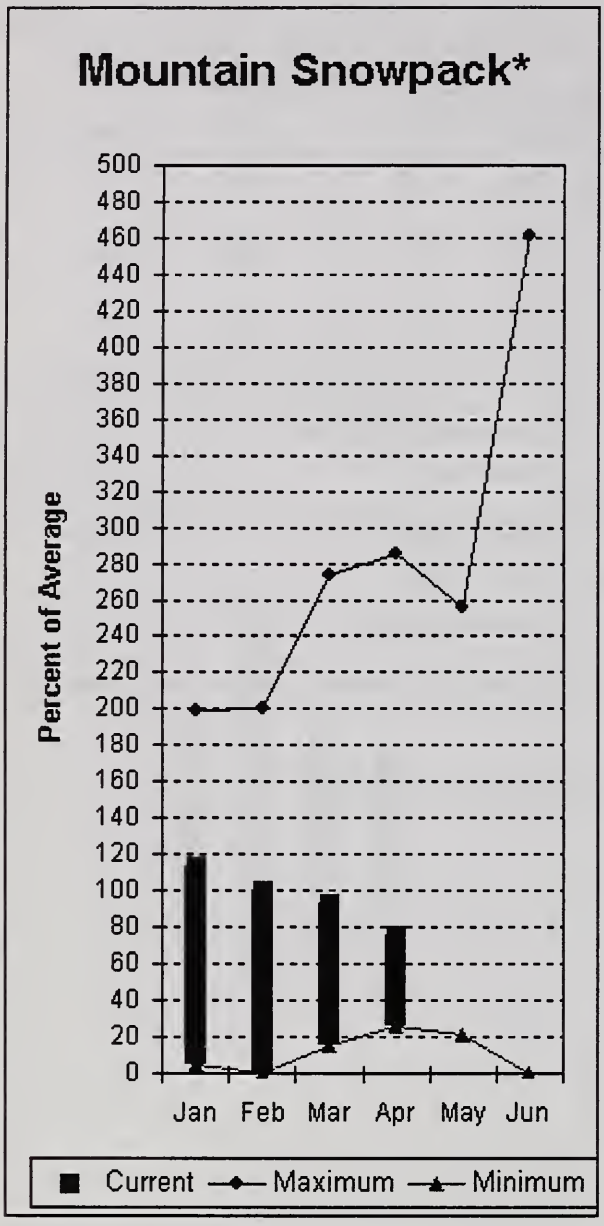
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	11	106	77
BAKER RIVER	3	113	77
NOOKSACK RIVER	2	155	100

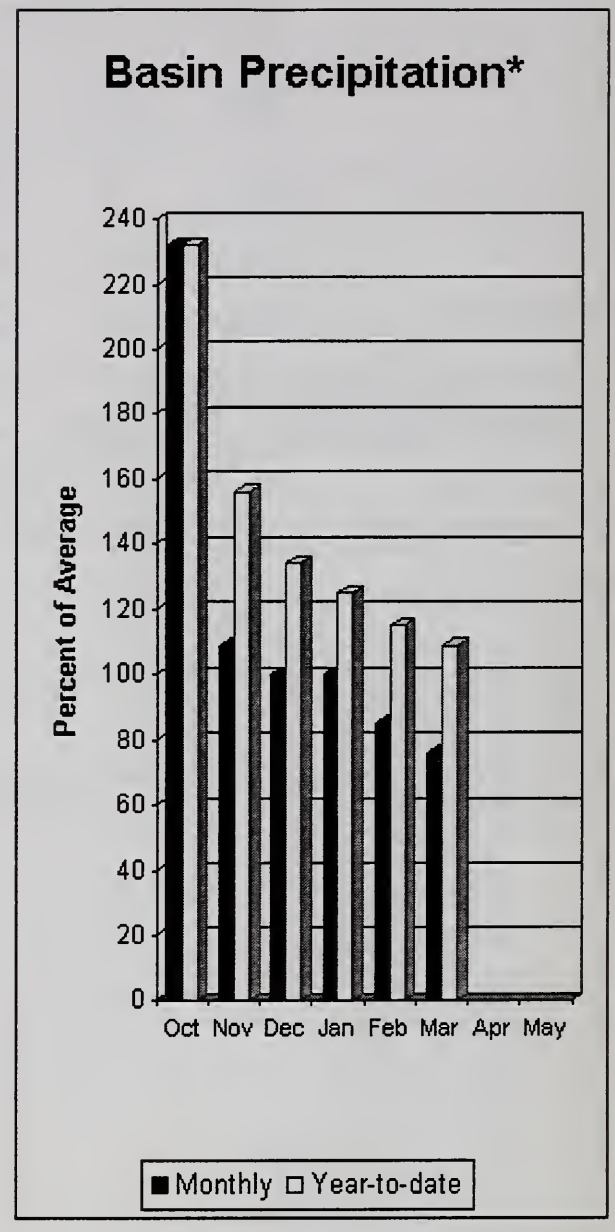
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins





*Based on selected stations

Forecasted average runoff for streamflow in the Dungeness River and Elwha River basins is 89% and 83% respectively. Big Quilcene and Wynoochee rivers should expect runoff in that same range this summer also. March precipitation was 76% of average. Precipitation has accumulated at 109% of average for the water year. March precipitation at Quillayute was 9.82 inches. The thirty-year average for March is 14.68 inches. Olympic Peninsula snowpack averaged 76% of normal on April 1. Temperatures were 3 degrees above average for the past 28 days and 1 degree above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - April 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	117	128	135	89	142	153	152
	APR-JUL	95	104	110	89	116	125	124
ELWHA near Port Angeles	APR-SEP	354	390	415	83	440	476	503
	APR-JUL	297	329	350	84	371	403	419

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - April 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
OLYMPIC PENINSULA	4	100	76

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada

Ministry of Sustainable Resources
Snow Survey, River Forecast Centre, Victoria, British Columbia

State

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal

Department of the Army
- Corps of Engineers

U.S. Department of Agriculture
- Forest Service

U.S. Department of Commerce
- NOAA, National Weather Service

U.S. Department of Interior
- Bonneville Power Administration
- Bureau of Reclamation
- Geological Survey
- National Park Service
- Bureau of Indian Affairs

Local

City of Tacoma
City of Seattle
Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company
Snohomish County P.U.D.
Colville Confederated Tribes
Spokane County
Yakama Indian Nation
Whatcom County
Pierce County

Private

Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association
Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA